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Open File Report 6148

Report of Activities, 2004 Resident Geologist Program

Thunder Bay South Regional Resident Geologist Report: Thunder Bay South District

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ONTARIO GEOLOGICAL SURVEY

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Thunder Bay South Regional Resident Geologist Report:
Thunder Bay South District

by

B.R. Schnieders, J.F. Scott, M.A. Magee, T.L. Muir and C. Komar

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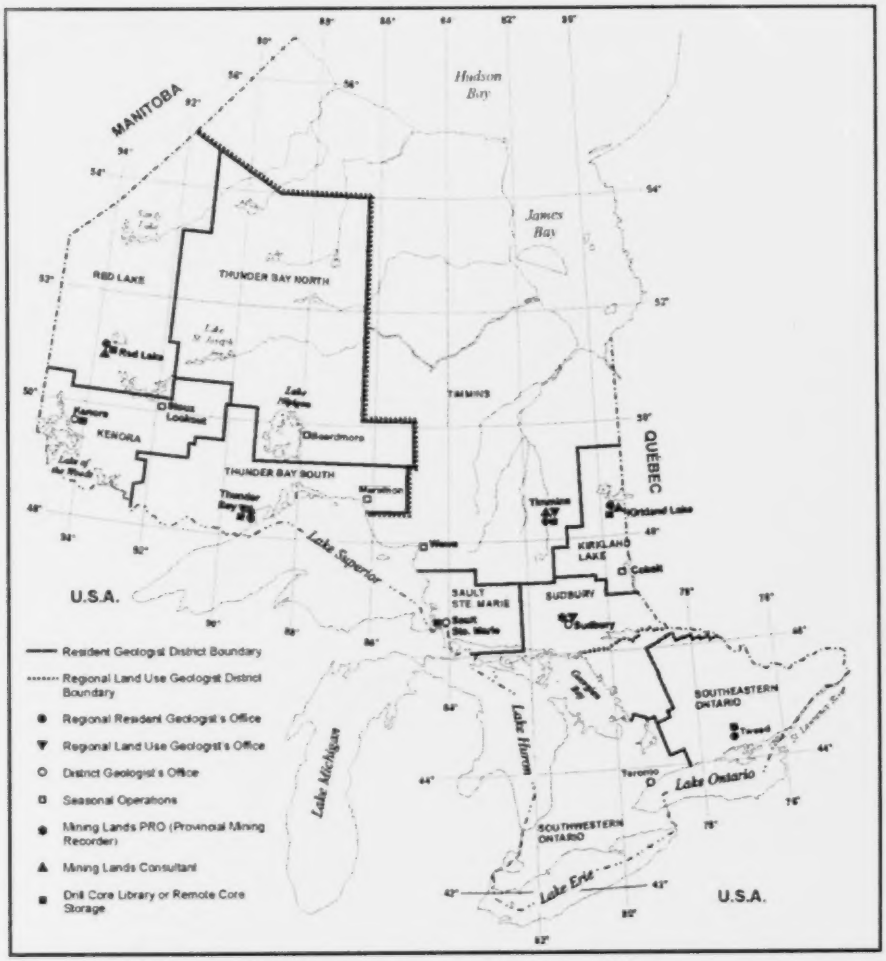

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Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Thunder Bay South Regional Resident Geologist (Thunder Bay South District)—2004

by

B.R. Schnieders, J.F. Scott, M.A. Magee, T.L. Muir and C. Komar

2005

CONTENTS

Thunder Bay South District—2004

INTRODUCTION 1
MINING ACTIVITY 1
- Amethyst 2
- Gold 2
  - David Bell Mine (Teck–Corona Operating Corporation) 2
  - Golden Giant Mine (Newmont Canada Limited) 2
  - Williams Mine (Williams Operating Corporation) 3
- Platinum Group Elements 3
  - Lac des Iles Mine (Lac des Iles Mines Ltd.) 3

EXPLORATION ACTIVITY 3
- Mining Lands 3
- Gold Exploration 3
- Base Metal Exploration 5
- Nickel-Copper-Platinum Group Element Exploration 6
- Uranium Exploration 7
- Diamond Exploration 7

RESIDENT GEOLOGIST PROGRAM STAFF AND ACTIVITIES 16
PROPERTY EXAMINATIONS 17
- Big Duck Lake Property 17
- Kukkee–Burchell Property 19
- Marathon Copper-PGM Deposit: Marathon PGM Corporation 20
- Moshkinabi, Ice Cream Lake, Faries Lake South Extension and Peacock Road (North Rawluck) Occurrences 21
  - Moshkinabi Lake Extension Occurrence 22
  - Ice Cream Lake Occurrence (R. Gionet) 22
  - Faries Lake South Extension 23
  - Peacock Road (Rawluck Lake Property) 23
- Sande–Stewart Occurrence 24

RECOMMENDATIONS FOR EXPLORATION 25
- The Big Duck Lake Porphyry (Schreiber Area) 25
- Uranium in the Thunder Bay Area 26
- Base Metal Potential of the Shebandowan Greenstone Belt 31
- Diamond Potential in the Hemlo Greenstone Belt 31

OGS ACTIVITIES AND RESEARCH BY OTHERS 33
ACKNOWLEDGMENTS 39
REFERENCES 39

TABLES

1. Mine production and reserves in the Thunder Bay South Resident Geologist's District in 2004. 1
2. Assessment files received in the Thunder Bay South Resident Geologist's District in 2004. 8
3. Exploration activity in the Thunder Bay South Resident Geologist's District in 2004 11
4. Property visits conducted by the Thunder Bay South Resident Geologist's Office in 2004. 16
5. Publications received by the Thunder Bay South Resident Geologist's Office in 2004. 35
6. Mineral deposits not being mined in the Thunder Bay South Resident Geologist's District in 2004. 36

FIGURES

1. Thunder Bay South Resident Geologist's District (western portion), exploration activity 2004. 14
2. Thunder Bay South Resident Geologist's District (eastern portion), exploration activity 2004. 15
3. Uranium occurrences in the Nipigon Basin 28
4. Felsic volcanics in the eastern Shebandowan greenstone belt.. 32

Thunder Bay South Regional Resident Geologist (Thunder Bay South District)—2004

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INTRODUCTION

The Thunder Bay South District covers an area from Calm Lake, west of Atikokan, east to White River, and north to Armstrong from the United States border. The District Program is based in Thunder Bay, but also maintains a seasonal field office in Marathon. The authors note that for ease of reading, the name of the reporting company has been omitted when referencing news releases, unless more than one company has been mentioned in the preceding text. All Universal Transverse Mercator (UTM) co-ordinates are reported in North American Datum 1927 (NAD27) unless otherwise noted. All assays were performed at the OGS Geoscience Lab in Sudbury unless otherwise noted.

MINING ACTIVITY

There were four producing precious and base metal mines, as well as several amethyst producers in the Thunder Bay South District in 2004. Mine production and reserves are listed in Table 1. Work completed within the Thunder Bay South District and filed for assessment credits is shown in Table 2. Exploration activity in the Thunder Bay South District is listed in Table 3.

Table 1. Mine production and reserves in the Thunder Bay South Resident Geologist's District in 2004.

Mine	Production to end of 2003		Production in 2004		Reserves at end of 2004	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
David Bell Mine	7 902 302 t @ 13.34 g/t Au	3 389 786 ounces Au	378 670 t @ 9.81 g/t Au	112 279 ounces Au	1 665 284 t	10.57 g/t Au
Golden Giant Mine	18 247 609 t @ 11.01 g/t Au	6 461 801 ounces Au	470 689 t @ 10.58 g/t Au	160 107 ounces Au	478 292 t	10.67 g/t Au
Lac des Iles Mine	17 961 902 t	1 137 300 ounces Pd 86 008 ounces Pt 81 639 ounces Au 23 577 323 pounds Cu 14 599 784 pounds Ni	5 298 544 t @ 2.41 g/t Pd	308 931 ounces Pd 25 128 ounces Pt 25 679 ounces Au 7 836 183 pounds Cu 4 320 970 pounds Ni	39 012 000 t (Open Pit reserves as of June 30, 2003) 4 978 000 t (Underground reserves as of June 30, 2003)	1.89 g/t Pd 5.88 g/t Pd
Williams Mine	41 240 226 t @ 5.82 g/t Au	7 712 172 ounces Au	3 283 776 t @ 3.86 g/t Au	382 599 ounces Au	23 673 066 t	2.57 g/t Au

Amethyst

Two areas northeast of Thunder Bay are well-known locations for amethyst veins and production. In the area along the Magone Lake Road, north of MacGregor Township (accessible via Highway 527), four sites see periodic, small-scale extraction of amethyst. In McTavish Township, eight deposits are accessible from Highways 11 and 17, four of which operate as seasonal tourist attractions. The Blueberry Amethyst Quarry also operates as a seasonal tourist attraction, southwest of Kakabeka Falls. Local amethyst deposits and mines are listed below:

Deposit / Mine	Location	Owner(s)
Amethyst Mine Panorama	McTavish Township	S. and T. Lukinuk
Ancliff Station Amethyst Quarry	McTavish Township	C. Anderson
Bak Quarry	McTavish Township	D. Bak
Blueberry Amethyst Quarry	Marks Township	J. Hakala and S. Belletini
Blue Points Amethyst Mine	McTavish Township	L. Swanson
Boulder Creek Amethyst Quarry	North of MacGregor Township	C. Anderson
Breezy Mountain Amethyst Mine	McTavish Township	T. Twomey
Crystal Creek Amethyst Mine	North of MacGregor Township	R. Hietapakka
DanBill Amethyst Mines	McTavish Township and North of MacGregor Township	B. Richardson and D. Arsenault
Diamond Willow Amethyst Mine	McTavish Township	D. Noyes
Gem Mountain Amethyst Mine	North of MacGregor Township	O. and R. Harty
Keetch Amethyst Quarry	McTavish Township	N. Keetch
Ontario Gem Amethyst Mine	McTavish Township	P. Marino
Purple Haze Mine	North of MacGregor Township	M. and S. Grieve

Gold

The three Hemlo mines (David Bell, Golden Giant and Williams mines) continue to produce gold from the Hemlo deposit.

DAVID BELL MINE (TECK–CORONA OPERATING CORPORATION)

Production from the David Bell Mine [Teck Cominco Limited (50%) – Barrick Gold Corporation (50%)], from January 1, 2004 to December 31, 2004, consisted of 112 279 ounces of gold from 378 670 t milled, at a feed grade of 9.81 g/t gold (T. Madill, Teck–Corona Operating Corporation, personal communication, 2004).

As of January 1, 2005, proven and probable reserves from the 'A', 'C' and 'D' zones totalled 1 665 284 t at a grade of 10.57 g/t gold, containing 565 805 ounces of gold (ibid.).

GOLDEN GIANT MINE (NEWMONT CANADA LIMITED)

Production from the Golden Giant Mine in 2004 totalled 470 689 t milled at an average grade of 10.58 g/t gold (160 107 contained ounces of gold) (S. Conquer, Newmont Canada Limited, personal communication, 2005).

As of January 1, 2005, proven and probable reserves for the Golden Giant Mine totalled 478 292 t at a grade of 10.67 g/t gold (164 105 total contained ounces gold) (ibid.). The Golden Giant Mine will produce until the end of 2005.

WILLIAMS MINE (WILLIAMS OPERATING CORPORATION)

Production from the Williams Mine [Teck Cominco Limited (50%) – Barrick Gold Corporation (50%)] in 2004 totalled 3 283 776 t milled at an average grade of 3.86 g/t gold (382 599 contained ounces of gold) (T. Madill, Williams Operating Corporation, personal communication, 2005).

As of January 1, 2005, underground and open-pit reserves for the Williams Mine totalled 5 744 310 t at a grade of 5.38 g/t gold (underground), and 17 928 756 t at a grade of 1.67 g/t gold (open pit), for a total of 23 673 066 t at a grade of 2.57 g/t gold (1 957 524 total contained ounces gold) (ibid.). The Williams Mine is actively exploring to delineate the total resource on the mine property (G. Skrecky, Williams Mine, personal communication, 2005). The Williams Mine has stepped up exploration and has approval for an expanded open pit operation. The mine will produce until 2012 and will be aggressive with both surface and underground exploration. The Williams Mine employs approximately 750 people *(The Chronicle-Journal*, March 27, 2004).

Platinum Group Elements

LAC DES ILES MINE (LAC DES ILES MINES LTD.)

In 2004, the Lac des Iles Mine of **North American Palladium Ltd.** processed 5 298 544 tonnes of ore, or 14 477 tonnes per day, with a head grade of 2.41 g/t palladium, producing 308 931 ounces palladium, 25 128 ounces platinum, 25 679 ounces gold, 7 836 183 pounds copper and 4 320 970 pounds nickel (press release, January 10, 2005).

Proven and probable reserves for the open pit are 39 million tonnes grading 1.89 g/t palladium, and underground probable reserves are 4.98 million tonnes of 5.88 g/t palladium (press release, August 22, 2003).

North American Palladium Ltd. announced that it will construct an underground mine at the Lac des Iles operation. A 2000-tonne per day underground mine will access 3.5 million tonnes of ore grading 6.6 g/t palladium, 0.4 g/t platinum, and 0.3 g/t gold (*The Northern Miner*, April 5, 2004). North American Palladium Ltd. began a $40 million expansion of the Lac des Iles Mine, including driving a decline ramp down 2000 feet below the main pit floor. The project will include a $10 million upgrade to the mill. The portal has been established and 400 m of main ramp has been driven (M. McIsaac, North American Palladium Ltd., personal communication, 2005). The company had a $3 million exploration budget for 2004 (*Northern Ontario Business*, June 2004).

EXPLORATION ACTIVITY

Mining Lands

In the Thunder Bay Mining Division, there were 14 098 claim units staked, 9303 claim units cancelled and a total of 43 141 active claims units as of December 31, 2004.

Gold Exploration

Freewest Resources Canada Inc. has extended the strike length of the main mineralized zone of the Larose property to 3.8 km. Diamond drilling in 2003 tested an 800 m long segment of the Main zone. Two new showings have been discovered in 2004 including the Sweet Spot, a 10 m wide shear zone located at the contact sedimentary rocks and a quartz-feldspar porphyry dike. Grab samples yielded up to 13.39 g/t gold. At the T Trench showing, the northeastern extension of the Main zone, grab samples assayed up to 139 g/t gold (D. Hoy, Freewest Resources Canada Inc., personal communication, February 2005). Line cutting, soil sampling, geological mapping, and IP geophysical surveys and diamond drilling were carried out in 2004 (press release, August 9, 2004). **Freewest Resources Canada Inc.** also carried out stripping, sampling and soil geochemical surveys on the Sungold and Central Canada properties in Shebandowan and Atikokan, respectively. **Freewest Resources Canada Inc.** optioned the Red Fox Lake property from J. and J. Hackl (press release, July 1, 2004).

Goldcorp Inc. has joint ventured with **Pele Mountain Resources Inc.** the Ardeen Mine property in the Shebandowan greenstone belt. Goldcorp can earn 50% interest by spending $3 million before 2008, and can earn another 10% with another $1.5 million expenditure before 2009. The Ardeen Mine produced 30 000 ounces of gold, and 175 000 ounces of silver, from 1900 until the 1930s (*The Northern Miner*, July 5-11, 2004). Goldcorp Inc. conducted exploration on Pele Mountain Resources' Ardeen Mine property. Compilation work, resampling of diamond-drill core, and a 2500 m diamond-drilling program were completed. Grab and channel sampling returned up to 34 g/t gold (*The Northern Miner*, October 7, 2004) (press release, November 11, 2004).

East West Resource Corporation and **Maple Minerals Corp.** have commenced follow-up mapping, prospecting, sampling and drilling on the Deaty, Hamlin, Powell, Clay and Burchell properties. IP surveys are planned after a first-phase drilling program followed by additional drilling. Assays of 6 g/t gold and 21 g/t gold have been found along the boundary of the Powell and Clay properties (press release, June 21, 2004). **East West Resource Corporation** has completed three diamond-drill holes on the Hamlin property. Shear zones of up to 15 m were intersected in a large quartz-porphyry system with Cu-Mo-Au. Values of up to 1.1 g/t gold were intersected in sheared porphyry (press release, November 4, 2004). A second drill has been mobilized to test numerous IP anomalies and new EM conductors on the Hamlin and Powell properties. **East West Resource Corporation** has entered into joint venture with Ethelburga Group to explore for uranium, copper and gold in the Thunder Bay area. At the Glacier and Jackpine projects, IP resistivity and magnetic surveys will be conducted, followed by diamond drilling (press release, November 22, 2004).

Moss Lake Gold Mines Ltd. drilled a nine-hole (1500 m) diamond-drill program on the Moss Lake and Fountain Lake properties. Drilling in 2003 intersected 6.91 g/t gold over 1.86 m. Mineralization occurs in broad pyritic zones hosted by felsic tuff and fragmental rocks. Additional drilling will test the mineralized zone for an additional 250 m strike length (press release, November 4, 2004).

RJK Explorations Ltd. conducted mechanical stripping and sampling on the Martin Bay property near Shebandowan Lake. Grab samples from the Haines Shebandowan occurrence assayed up to 21.56 g/t gold. New stripping and grab sample assays from the Martin Bay deformation zone returned values up to 2.75 g/t gold from quartz veins and up to 1.41 g/t gold from altered host rocks (monzonite) (press release, November 8, 2004).

Navasota Resources Ltd. has joint ventured the Stenlund gold property in the Hemlo gold belt. The Porphyry and 109 zones are located within the Hemlo–Heron Bay Shear zone. Previous drilling by Teck-Cominco Ltd. on the 109 zone returned one interval of 9.3 g/t gold over 7.3 m across a series of potassium feldspar-altered quartz-carbonate veins in a deformation zone hosted by felsic fragmental rocks and quartz-feldspar porphyry (press release, September 29, 2004).

CanAlaska Ventures Ltd. has entered into a joint venture with **Freewest Resources Canada Inc.** on the Smoke Lake gold property, located north of Marathon. Surface stripping has indicated zones up to 700 by 500 m that show multiple high-grade gold mineralized zones, primarily within volcanic rocks. Gold values up to 846.9 g/t gold are present in veins peripheral and adjacent to a granite intrusion *(Canada Stockwatch*, August 11, 2004). Drilling was conducted and assays are pending (press release, August 11, 2004).

Canadian Empire Exploration Corp. optioned the Atikokan West property from **Teck Cominco Ltd.** Teck Cominco optioned the property from the Bjorkman family of Atikokan. The Atikokan West property consists of 137 claim units and has recently undergone diamond drilling by Teck Cominco. The claims cover an 8 km strike length with seven structurally controlled gold occurrences in favourable volcanic rocks analogous to Red Lake high-grade gold systems (*Canada Stockwatch*, February 18, 2004). Prospecting, stripping, sampling and further diamond drilling was conducted on the property in 2004.

ValGold Resources Ltd. completed three diamond-drilling programs in 2004 on its Tower Mountain property. Several high-grade gold intersections were encountered. Hole DDH04-06 returned 164.7 g/t (4.80 ounces per ton) gold over 1.5 m (4.9 feet). The hole was 50 m southwest of Hole DDH04-04 where earlier drilling intersected 588.9 g/t gold over 1.5 m (press release, March 3, 2004). Additional highlights include hole DDH-04-12, which intersected 40.5 m of 1.05 g/t gold, and hole DDH-04-14 that intersected 3 m of 5.17 g/t gold. Hole DDH03-11, intersected 19.76 g/t gold over 1.5 m. Hole DDH-03-08 intersected 0.50 g/t gold over 58.5 m. The diamond-drilling

program concentrated on the U/V trench area where a northwesterly striking, mineralized corridor of up to 150 m wide and 500 m long has been identified (press release, January 12, 2004). Further drilling is planned for 2005.

AurMin Corporation has optioned the Burchell Lake property from John Ternowesky and Mike Fogen. The 100+ claim group has potential for base metals and gold with 1970s diamond drilling grading 0.232% copper over 315 feet (96 m) (*Company Fact Sheet*, March 12, 2004).

Redstar Gold Corp. has optioned the Sunshine Road and the Chubb copper projects in the Atikokan area from K. Bjorkman and family. Prospecting by K. Bjorkman led to new gold discoveries up to 68 g/t gold in quartz veins, and 2.4 g/t gold in a porphyry intrusion (Schnieders et. al. 2004).

Coniagas Resources Ltd. optioned the Elizabeth prospect near Atikokan. The property was last worked by Société Minière Mimiska Inc. (1990) who identified at least six gold-bearing quartz veins and two of the veins were drilled to a depth of 240 m (*Canada Stockwatch*, March 12, 2004). Stripping, trenching, sampling and geological mapping were performed, including the discovery of a new quartz vein, which assayed up to 12 ounces per ton (K. Bjorkman, Prospector, personal communication, 2004).

International Green Ice Inc. completed exploration on the Narrows Claims including stripping, trenching, channel sampling and analyses. Four new gold occurrences were identified including grab sample assays up to 4.9 g/t gold. In addition 251 ppb Pt and 133 ppb Pd over 11 m was reported from channel sampling (*Canada Stockwatch*, March 8, 2004).

Staccato Gold Resources Ltd. completed a 1240 m diamond-drilling program on the Swamp–Shebandowan property in the fall of 2003, and released results including the discovery of a new gold zone 100 m south of the Main zone. Assay values of up to 7.4 g/t gold across 0.5 m and 4.65 g/t gold over 1.6 m were reported from Holes 4 and 7. The historic resource estimate for the Main zone is listed at 700 000 tonnes grading 6.9 g/t gold (this resource estimate does not conform to the CIM approved standards as required by NI 43-101) (*Canada Stockwatch*, February 27, 2004).

Sparton Resources Inc. has transferred its interest in the Hemlo properties to **Beaufield Consolidated Resources Inc.** Exploration is currently underway on the Fowler and Qued properties (press release, July 22, 2004). **AntOro Resources Inc.** is currently conducting soil geochemical surveys on the Black River–Hemlo property.

Base Metal Exploration

Phoenix Matachewan Mines Inc. has identified a major VMS/gold exploration target on the Steel River property. A 36 km long target zone was mapped, prospected, and sampled in 2004, with a focus on the exhalite-chert and adjacent felsic strata. Geophysical surveys and subsequent diamond drilling are planned on conductors and key indicator anomalies (press release, November 8, 2004).

Canadian Golden Dragon Resources Ltd. completed diamond drilling on the Vanguard base metal prospect. Hole VE04-05 intersected 6.39% zinc, 1.89% copper, 28.31 g/t silver and 0.88 g/t gold over 4.15 m. Detailed mapping is continuing on the Vanguard Extension, as well as drilling of previously identified EM targets is planned (press release, September 1, 2004). At Tilly Creek grab sampling of newly stripped and trenched sulphide zones from East Tilly Creek, conducted by **Canadian Golden Dragon Ltd.**, assayed up to 10.75% copper, 95.3 g/t silver, and 1.77 g/t gold (press release, August 5, 2004).

RJK Explorations Ltd. and **GLR Resources Inc.** diamond drilled the Stares–Calvert property in Aldina Township. The drill program tested down-plunge extensions of surface base metal (Cu-Zn-Pb) mineralization, as well numerous polymetallic float boulders, up to 15 tons in size. A VTEM (Dream Catcher) helicopter-borne, airborne geophysical survey was flown over the property (*Canada Stockwatch*, January 19, 2004). Drill hole MS04-03, drilled 75 m west of the surface massive sulphide discovery, intersected 0.57m of semi-massive polymetallic mineralization including pyrite, pyrrhotite and sphalerite (*Canada Stockwatch*, February 11, 2004).

Atikokan Resources Inc. stockpiled several hundred tonnes of high-grade silver, zinc and lead ore. Ninety-seven tonnes was shipped and milled, assaying up to 16 ounces per ton silver (R. Bernatchez, Atikokan Resources Inc., personal communication, 2005).

Nickel-Copper-Platinum Group Element Exploration

North American Palladium Ltd. limited are drilling two holes including a 2200 m diamond-drill hole on the Lac des Iles Mine property that will test the down plunge extension of the High-Grade Offset zone, some 600 m below the nearest existing drill intercepts (M. McIsaac, North American Palladium Ltd., personal communication, 2005). Additional drilling of up to 5000 m will evaluate targets within the Lac des Iles Complex, including the Creek, Baker, and South-East Roby zones. A total of 3000 m of drilling was conducted on the Shebandowan project, including drilling on geophysical targets associated with ultramafic bodies, as well as a high-grade palladium-bearing breccia and a gold-bearing quartz vein (press releases, October 6 and November 9, 2004).

East West Resource Corporation and **Canadian Golden Dragon Resources Ltd.** have entered into a joint venture with **Platinum Group Metals Ltd.** to explore for Pt, Pd, Cu and Ni on the Seagull–Disraeli property. **East West Resource Corporation** discovered two new platinum group element (PGE) reefs/zones from previous drilling on the Seagull Intrusion. Two new horizons with values of 4 g/t platinum group elements over 2 m, with PGE horizons extended for 400 m and up to 11 m thick, were discovered by sampling performed by the Ontario Geological Survey, IRAP and Lakehead University (press release, June 9, 2004). The Ontario Geological Survey discovered a platinum-rich layer in the olivine-dunite phase, which assayed 3.40 g/t platinum and 1.20 g/t palladium, as well as 0.23% nickel (*Canada Stockwatch*, May 18, 2004). A $7.5 million exploration program has been outlined and diamond drilling has commenced (press release, September 28, 2004). A new 0.65 m layer was recently intersected and assayed up to 6.21 g/t (platinum group elements + gold). Further drilling is ongoing (Platinum Group Metals Ltd. press release, January 18, 2005).

Platinum Group Metals Ltd. completed a 3040 m diamond-drill program targeting extensions of the Powder Hill, Stinger and Shelby platinum group element zones. Highlights include 1.81 g/t palladium+platinum+gold over 5.2 m and 1.28 g/t palladium+platinum+gold over 6.5 m from the Stinger zone, and 2.83 g/t palladium+platinum+gold over 1.2 m from the Powder Hill zone. Results continue to demonstrate the extensive nature of the platinum group element-mineralized system hosted by the Towle Lake intrusion (*Canada Stockwatch*, February 18, 2004).

Marathon PGM Corporation conducted an exploration program including prospecting, mapping, sampling, stripping, and 4000 m of diamond drilling on its Marathon property. The Marathon property has a resource of 24.3 million tonnes @ 1.22 g/t palladium, 0.31 g/t platinum, 0.10 g/t gold, and 0.37% copper (press release, October 12, 2004). Drilling totalled 32 NQ holes: 6 holes are in the BR zone; 8 holes in the RD zone; 10 holes in the Malachite zone; and 8 holes in the Southern Resource zone. The Malachite zone returned encouraging intersections, including Hole M-12-04 which intersected 1.2 g/t palladium, 0.37 g/t platinum, 0.10 g/t gold, and 0.28% copper over 72.0 m. Hole M-04-21 intersected 3.11 g/t palladium+gold and 0.19% copper over 46 m. Hole M-04-21 was drilled south of Anaconda Hole DH-123, and intersected 15.5 m grading 4.7 g/t combined platinum group metals and 0.20% copper (*Canada Stockwatch*, December 3, 2004).

MetalCORP Ltd. completed 12 diamond-drill holes on the Big Lake property near Marathon and discovered new copper-nickel-platinum-palladium and copper-zinc mineralization. Drilling intersected 0.42% nickel and 0.43% copper over 1.15 m (including 0.7% nickel, 0.6% copper over 0.30 m) in a varied textured melagabbro (A2 zone), as well as 0.4% copper and 0.2% nickel over 4.8 m (including 1% copper and 0.3% nickel over 0.8 m). Reef-type platinum-palladium mineralization (J4 Reef) was intersected in a peridotite unit, including 1.1 g/t platinum+palladium over 2.11 m. MetalCORP conducted down-hole pulse EM geophysical surveys, and discovered strong off-hole conductors down plunge, and down dip to the west. In addition a VMS-stringer zone (BL-14 zone) was intersected, with two higher-grade intervals assaying 0.9% copper, 0.5% zinc and 18.8 g/t silver over 0.90 m and 1.0% copper, 0.8% zinc and 33.5 g/t silver over 1.05 m. A second phase of drilling is now ongoing (press release, December 21, 2004).

Benton Resources Corp. diamond drilled the Skipper Lake zone in the Coldwell Alkaline Complex. Hole B1-04 intersected 21.7 m of 1.3 g/t platinum, palladium and gold with a second zone in the same hole of 8.3 m of 1.73 g/t platinum, palladium and gold (press release, March 10, 2004).

Novawest Resources Inc. completed 11 diamond drill holes (4,926 ft. / 1,502m) on the Nickel Royale (Nicopor) property in the Schreiber Greenstone Belt. Disseminated to semi-massive sulphide mineralization was intersected associated with a magnetic pyroxenite. Drill hole 03 intersected 15.2 feet of 0.55% nickel and 0.23% copper (B. Fowler, Prospector, personal communication, August 2004). Further exploration is planned on the property.

Buck Lake Ventures Ltd. completed a 14-hole diamond drilling project on its Buck Lake property in the Lac des Iles area. Drill Hole #1 intersected 0.81 g/t platinum group elements, 0.11% copper and 0.13% nickel over 1.75 m, and Hole #9 intersected 2.12 g/t platinum group elements, 0.12% copper and 0.31% nickel over 2.56 m (press release, August 10, 2004).

Uranium Exploration

Rampart Ventures Ltd. has entered into an agreement with **New Shoshoni Ventures Ltd.** on the Wolfpup Lake and Black Sturgeon West Uranium properties in the Nipigon Basin, northeast of Thunder Bay. The Black Sturgeon West claim group covers an occurrence of narrow pitchblende veins cutting an Archean iron formation in supracrustal rocks, while the Wolfpup Lake group includes a cluster of lake sediment anomalies (GSC 1981) (*Canada Stockwatch*, March 8, 2004). Grab samples from vein material from the Black Sturgeon west property, and collected by the OGS (Scott 1987), assayed up to 12% U_3O_8. Rampart Ventures has also entered into two other agreements to acquire six additional uranium properties. Exploration will explore the Nipigon Basin, which is stated to be the least explored Helikian-aged sedimentary basin in Canada (press release, October 1, 2004). **Rampart Ventures Ltd.**, in joint venture with **New Shoshoni Ventures Ltd.**, have staked a block of 2111 claim units in the Sibley Basin. The company is exploring for unconformity-type uranium mineralization. EM geophysical surveys are planned for the property (*Canada Stockwatch*, December 13, 2004).

Maple Minerals Corp. and **East West Resource Corp.** have acquired two uranium properties in the Nipigon Plate area near Thunder Bay. The occurrences assay up to 27% U_3O_8, and are found at the Sibley metasedimentary rock basement unconformity, extending into basement rocks. Extensive staking of the Sibley Basin occurred in late 2004 (press release, November 18, 2004).

Diamond Exploration

Ripple Lake Diamonds (RLD) Inc. has discovered three micro-diamonds in a small 3 by 3 m diatreme associated with a calc-alkalic lamprophyre (minette) dike, located on the Trans-Canada Highway approximately 30 km west of Marathon. While Ripple Lake Diamonds states that the small diatreme has little economic significance on its own, the presence of diamonds indicates diamond-bearing mantle, and significantly enhances the diamond potential of the area. More than 2200 claim units have been staked and acquired in the area. Ripple Lake Diamonds Inc. has acquired a large, strategic land position (Company Prospectus, September 24, 2004).

Table 2. Assessment files received in the Thunder Bay South Resident Geologist's District in 2004.

Abbreviations

AEM ..... Airborne electromagnetic survey
AM ..... Airborne magnetic survey
ARA ..... Airborne radiometric survey
Beep ..... Beep Mat survey
Bulk ..... Bulk sampling
DD ..... Diamond drilling
DDH ..... Diamond drill hole(s)
DGP ..... Down-hole geophysics
GC ..... Geochemical survey
GEM ..... Ground electromagnetic survey
GL ..... Geological Survey
GM ..... Ground magnetic survey
GRA ..... Ground radiometric survey
Grav ..... Gravity survey
HLEM ..... Horizontal loop electromagnetic survey
HM ..... Heavy mineral sampling
IM ..... Industrial mineral testing and marketing
IP ..... Induced polarization survey
Lc ..... Linecutting
Met ..... Metallurgical testing
OD ..... Overburden drilling
ODH ..... Overburden drill hole(s)
PEM ..... Pulse electromagnetic survey
PGM ..... Platinum group metals
Pr ..... Prospecting
RES ..... Resistivity survey
Samp ..... Sampling (other than bulk)
Seismic ..... Seismic survey
SP ..... Self-potential survey
Str ..... Stripping
Tr ..... Trenching
UG ..... Underground exploration/development
VLEM ..... Vertical loop electromagnetic survey
VLFEM ..... Very low frequency electromagnetic survey

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Adrian, Aldina and Sackville townships	RJK Explorations Ltd. and GLR Resources Inc.	2004	AEM, AM	2.27611	52A05/NW-059
Aldina Township	RJK Explorations Ltd. and GLR Resources Inc.	2004	DD, Samp	2.27568	52A05/NW-060
Allely Lake	North American Palladium Ltd.	2002 -03	GL, Samp	2.24945	52G09/SW-002
Armistice Lake	Buck Lake Ventures Ltd. and Lac des Iles Mines Ltd.	2002 -03	GL, Pr, Str, Samp	2.23276	52H05/SW-021
Bedivere Lake	Fenwick, K.	2003	Str, Samp	2.27415	52B15/SW-027
Begin Township	Holbik, E.	2003	Pr, Samp	2.26985	52B09/SW-068
Brothers and Bomby townships	AntOro Resources Inc.	2003	IP	2.27108	42C12/NW-117
Burchell Lake	Alto Ventures Ltd.	2002 -04	DD, Samp	2.27168	52B10/SE-162
Burchell Lake	Maple Minerals Corporation	2003	AEM	2.27254	52B10/SE-160
Burchell and Kashabowie lakes	Canadian Golden Dragon Resources Ltd.	2004	AEM, AM	2.27791	52B10/SE-163, 52B09/NW-091
Cecil Township	Gionet, G.	2003	Pr, Tr	2.27208	42F04/SE-030
Cecil Township	Gionet, G.	2003	Tr	2.27579	42F04/SE-029
Cheeseman Lake	Canplats Resources Corporation	2003	DD, Samp	2.27459	52H06/NW-019
Circle Lake	Canplats Resources Corporation and East West Resource Corporation	2003	GC, Samp	2.26878	52H06/SE-012, 52H03/NE-016
Cirrus and Lorna lakes	Teck Cominco Ltd.	2003	GM, IP,DD, Lc, Samp	2.26930	42D16/SE-054, 42D16/NE-034
Conmee Township	ValGold Resources Ltd.	2003	DD, Str, Samp	2.27236	52A12/SE-031
Dorion Township	Haskell, K.	2002 -03	Str	2.27564	52A15/SE-023

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Duckworth Township	Fournier, E. and Starr, E.	2003 -04	Str, Tr, Samp	2.27093	52B09/SE-122
Flatrock Lake	Clemons, B.	2001 -03	Str, Samp	2.26820	52B08/SE-011
Foxtrap Lake	Bond, J., Renner, R., and Wahl, R.	2002	GL, Pr, Samp	2.27533	42D15/NE-015
Freeborn Township	Moffat, R.	2002 -03	Str, Samp	2.27049	52B13/SE-039
Gillard Lake	Lac des Iles Mines Ltd./North American Palladium Ltd.	2003	GL, GM, Samp	2.26728	52H12/NW-006
Haines Township	North American Gem Inc.	2003	Str, Samp	2.27158	52B09/NW-087, 52B09/SW-069
Haines Township	Wing Resources Inc.	2003 -04	GL, Samp	2.27565	52B09/NW-089
Herbert and Roberta townships	Gionet, R.	2003	Tr	2.26817	42F04/NE-067
Kashabowie Lake	Canadian Golden Dragon Resources Ltd.	2003	DD, Samp	2.27255	52B09/NW-088
Kashabowie Lake	Canadian Golden Dragon Resources Ltd.	2003	DD, Samp	2.27778	52B09/NW-090
Kashabowie Lake	Canadian Golden Dragon Resources Ltd.	2003	GC	2.26861	52B10/NE-018, 52B09/NW-086
Lac des Iles	AntOro Resources Inc.	2003 -04	GM, IP	2.27106	52H04/NE-037
Lac des Iles	Avalon Ventures Ltd. and Starcore Resources Ltd.	2000 -01	GM, IP, DD, Samp	2.23833	52H04/NE-036, 52H04/SE-030
Laurie Township	Kukkee, P.	2003	Str, Samp	2.26711	52A12/SW-122
Laurie and Blackwell townships	RJK Explorations Ltd.	2003	DD	2.26875	52A12/SW-123
Leckie Lake	Avalon Ventures Ltd.	2002	GEM	2.26191	52H02/SW-026, 52H03/SE-011
Lorna Lake	Bond, J., Michano, D., Moses, P., Renner, R. and Fenwick, K.	2003	DD, Samp	2.27377	42D16/SE-055
MacGregor Township	Ciccarelli, M.	2004	Str	2.27672	52A06/NE-006
MacGregor Township	Grieve, M.	2003	Str	2.27360	52A10/SW-030, 52A10/NW-028
MacGregor Township	Grieve, M.	2003	Str	2.27361	52A10/SW-031, 52A10/NW-029
Marmion and Finlayson lakes	Fern Elizabeth Gold Exploration Ltd.	2002	Str, Samp	2.24087	52B13/NE-019
Maryjane Lake	East West Resource Corporation and Maple Minerals Corp.	2002	DD	2.26657	52H09/SE-034
McTavish Township	Arsenault, D.	2003	Pr	2.27081	52A10/NE-065
McTavish Township	Bak, D.	2004	Str	2.27934	52A10/NE-066

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
McTavish Township	Breezy Mountain Amethyst Mines Ltd.	2003 -04	GL, Str	2.27606	52A10/NE-064
McTavish Township	Stone, T. and Stone, A.	2002 -03	Str	2.26580	52A10/NE-063
Mikinak Lake	East West Resource Corporation, Teck Cominco Limited and Canadian Golden Dragon Resources Corp.	2001 -02	GEM	2.23637	52H07/SW-019
Miranda Lake	Bjorkman, K., Bjorkman, J. and Bjorkman, K.	2004	DD	2.27211	52B13/SW-027
Moss Lake	Moss Lake Gold Mines Ltd.	2003	DD, Samp	2.27301	52B10/SE-161
Pangloss Lake	Sutton, G., Barrow, S., Benninghaus, E. and Luoma, T.	2000 -01	Pr	2.24923	52H14/SW-007, 52H11/SW-011
Pic Township	Wahl, R.	2003	GL, Samp	2.26847	42D09/NW-129
Powell Lake	East West Resource Corporation	2003	AEM	2.27256	52B07/NE-010, 52B07/NW-060, 52B10/SE-159
Powell Lake	Freewest Resources Canada Inc.	2003	GEM, GM, Lc	2.26583	52B07/NW-059
Powell and Tilly lakes, Moss Township	East West Resource Corporation and Maple Minerals Corp.	2004	AEM, AM	2.27257	52B07/NW-061
Priske Township	Bond, J. and Renner, R.	2002 -03	Pr, Samp	2.26643	42D14/SE-118
Priske Township	Fowler, B. and Griggs, H.	2003	GEM, GM, Pr, Lc, Samp	2.26829	42D14/SW-048
Priske Township	Kravchik, S.	2003	Pr, Samp	2.27151	42D14/SE-119
Roberta Township	Gionet, J.	2003	GM, Pr	2.26023	42F04/SE-028
Sawbill Bay	Sande, D. and Stewart, E.	2001 -02	Samp	2.24465	52B14/NW-033
Senga Lake	Platinum Group Metals Ltd.	2003	AEM, AM	2.27192	52H04/SW-016
Shelby Lake	East West Resource Corporation, Maple Minerals Corp. and Canadian Golden Dragon Resources Ltd.	2003	DD, Samp	2.27300	52H04/SE-031
Tartan Lake	Siltamaki, A. and Erickson, R.	2002 -03	Str	2.27911	52A10/NW-030
Tib Lake	Buck Lake Ventures Ltd.	2003	GL, Samp	2.26587	52H04/NW-040
Tib Lake	Houston Lake Mining Inc. and Agnico-Eagle Mines Ltd.	2002 -03	GL, Str, DD, Samp	2.24942	52H04/NW-041, 52H05/SW-020
Tib Lake	Morehouse, W. and Richmond, W.	2004	GL	2.27963	52H04/NW-043
Tib Lake	Platinum Group Metals Ltd.	2003	GL, Samp	2.27400	52H04/NW-042
Tuuri Township	Bond, J., Renner, R. and Wahl, R.	2003	GL, Samp	2.26453	42D15/SW-097

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Tuuri Township	Bond, J., Renner, R. and Wahl, R.	2003	Str, Samp	2.28029	42D15/SW-098
Wabikoba Lake	Fowler, B.	2003	GEM, GM, Pr, Lc, Samp	2.26828	42C13/SW-121
Wabikon Lake	Blakely, G. and Blakely, M.	2003 -04	Pr, Str	2.27663	52H06/SW-030
Weaver Lake	Lac des Iles Mines Ltd.	2003	DD, Samp	2.26759	52G09/SE-007
Weaver Township	Band-Ore Resources Ltd.	2003	GL, Pr, Samp	2.26671	52B14/SE-042
Weaver Township	Morehouse, W.	2003	DD	2.26400	52B14/SE-041
White Lake North	AntOro Resources Inc.	2003	GEM, GM	2.26426	42C12/NE-056, 42C13/SE-062
White Lake South	AntOro Resources Inc.	2003	GEM, GM, IP, Lc	2.27102	42C12/NE-058

Table 3. Exploration activity in the Thunder Bay South Resident Geologist's District in 2004 (keyed to Figures 1 and 2).

Abbreviations

AEM ..... Airborne electromagnetic survey
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PEM ..... Pulse electromagnetic survey
PGM ..... Platinum group metals
Pr ..... Prospecting
RES ..... Resistivity survey
Samp ..... Sampling (other than bulk)
Seismic ..... Seismic survey
SP ..... Self-potential survey
Str ..... Stripping
Tr ..... Trenching
UG ..... Underground exploration/development
VLEM ..... Vertical loop electromagnetic survey
VLFEM ..... Very low frequency electromagnetic survey

No.	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
1	Aavdex Corporation (Black Fly property)	Atikokan (Au)	GM, DD
2	Anderson, C. (Location 3 property)	McTavish Township (amethyst)	Pr, Samp
3	AntOro Resources Inc. (Hemlo property)	Wabikoba Lake (Au)	GC
4	AntOro Resources Inc. (Black River–Hemlo property)	White Lake (Au)	GC, GEM, GM
5	Atikokan Resources Inc. (Lumby Lake project)	Norway Lake (Ag, Cu, Zn, Pb)	Bulk
6	Beaufield Consolidated Resources Inc. (Qued property–Fowler property)	Wabikoba Lake (Au)	DD
7	Bjorkman, K. (Jess Lake property)	Sapawe area, Hutchinson Township (Au)	Pr, Samp
8	Buck Lake Ventures Ltd. (Buck Lake property)	Lac des Iles (Cu, Ni, PGE)	DD, Samp
9	Canadian Empire Exploration Corp. (Atikokan West property)	Baker Township (Au)	Pr, Str, DD, Samp
10	Canadian Golden Dragon Resources Ltd. (Tilly Creek property)	Tilly Lake (Au, Cu)	AEM, AM, Pr, Samp

No.	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
11	Canadian Golden Dragon Resources Ltd. (Vanguard property)	Kashabowie Lake–Burchell Lake (Cu, Zn, Au)	AEM, AM, GL, Pr, Str, DD, Samp
12	Canadian Golden Dragon Resources Ltd.–Platinum Group Metals Ltd. (South Legris Lake)	Lac des Iles–Max Lake (PGE, Cu, Ni)	GC, DD
13	CanAlaska Ventures Ltd. (Smoke Lake property)	Lorna Lake (Au)	DD, Samp
14	Canplats Resources Corporation (Geikie property)	Cheeseman Lake (PGE, Cu, Ni)	DD
15	Coniagas Resources Limited (Elizabeth property)	Freeborn Township (Au)	Pr, Str, Samp
16	East West Resource Corporation (Burchell property)	Shebandowan (Au, Cu, Zn)	AEM, GL, Pr, DD, Samp
17	East West Resource Corporation (Clay property)	Shebandowan (Au)	AEM, AM, Pr, DD, Samp
18	East West Resource Corporation (Deaty property)	Shebandowan (Au)	AEM, AM, GL, Pr, Samp
19	East West Resource Corporation (Glacier property)	Cosgrove Lake (Cu, Au)	Pr, Samp
20	East West Resource Corporation (Hamlin property)	Shebandowan (Au)	AEM, AM, GL, IP, DD
21	East West Resource Corporation (Jackpine property)	Blair Lake (Cu, Au)	GL, Pr, Samp
22	East West Resource Corporation (Obadinaw property)	Shebandowan (Au)	GL, IP, Lc
23	East West Resource Corporation (Powell property)	Shebandowan (Au)	AEM, AM, GL, DD
24	East West Resource Corporation (Shear property)	Shebandowan (Au)	GEM, GL, GM
25	Freewest Resources Canada Inc. (Central Canada property)	Hutchinson Township (Au)	Pr, Str, Samp
26	Freewest Resources Canada Inc. (Larose property)	Moss Township (Au)	GC, GL, GM, IP, Pr, Str, DD, Samp
27	Freewest Resources Canada Inc. (Redfox property)	Powell Lake (Au)	Pr, Str, Samp
28	Freewest Resources Canada Inc. (Sungold property)	Powell Lake (Au)	GC, Pr, Str, Samp
29	Gionet, G. and M. (Faries Lake property)	Cecil Township (Cu, Ni, Zn, PGE)	Pr, Str, Tr, Samp, Beep
30	Gionet, G. and M. (Moshkinabi property)	Roberts and Herbert townships (Cu, Ni, PGE)	Pr, Tr, Samp, Beep
31	Goldcorp Inc.–Pele Mountain Resources Inc. (Ardeen Mine)	Moss Township (Au)	DD
32	Hackl, J. and J. (Bolton Bay)	Lac des Mille Lacs (Au)	Pr, Str, Samp
33	Hackl, J. and J. (Dam property)	Shabaqua (Au)	Pr, Str, Samp
34	Hackl, J. and J. (Moosecalf East property)	Laurie Township (Au)	Pr, Str, Samp
35	Hakala, J. and Holbik, E. (Hidden Treasure property)	Calm Lake (Au)	Pr, Str
36	Hinterland Metals Inc. (Shabaqua property)	Blackwell Township (Au)	Pr, Samp
37	International Green Ice Inc. (Narrows Claims)	Haines Township (Au, PGE)	Str, Tr, Samp
38	Kukkee, P. (Gold Cache property)	Haines Township (Au)	Str, Samp
39	Maple Minerals Corp.–East West Resource Corporation	Sibley Basin (U)	Samp
40	Marathon PGM Corporation (Marathon PGM project)	Seeley Lake (Cu, PGE)	GC, GL, Pr, Str, DD, Samp
41	MetalCORP Limited (Big Lake property)	Marathon (Cu, Ni, PGE)	AEM, AM, GEM, GL, Pr, Lc, DD, Samp
42	Moss Lake Gold Mines Inc. (Moss Lake property)	Moss Township (Au)	DD, Samp

No.	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
43	Navasota Resources Ltd.–Teck Cominco Limited (Hemlo West property)	Pic Township (Au)	DD
44	Noranda Inc. (Blake–Pardee property)	Pardee and Crooks townships (Cu, Ni, PGE)	GL
45	North American Gem Inc. (Crayfish property)	Shebandowan–Haines Township (Au, Cu, Ni, PGE)	Pr, Str, Samp
46	North American Palladium Ltd. (Haines Gabbro property)	Shebandowan–Horne Township (Cu, Ni, PGE)	GL, Str, Lc, DD, Samp
47	North American Palladium Ltd. (Lac des Iles Mine property)	Lac des Iles (Cu, Ni, PGE)	AEM, AM, GL, Pr, Str, DD
48	North American Palladium Ltd. (Legris Lake property)	Lac des Iles (Cu, Ni, PGE)	AEM, AM, GL, Pr, Samp
49	North American Palladium Ltd. (Shebandowan property)	Haines and Conacher townships (Cu, Ni, PGE)	AEM, AM, GC, GL, Grav, Pr, DD, Samp
50	Novawest Resources Inc. (Nickel Royale property)	Schreiber (Cu, Ni, PGE)	DD
51	Phoenix Matchewan Mines Inc. (Steel River property)	Steel and Prairie rivers, Tuuri and Walsh townships (Cu, Zn)	GC, GL, Pr
52	Platinum Group Metals Ltd. (Dog River property)	Senga Lake (PGE)	GL, Pr, Lc, Samp
53	Platinum Group Metals Ltd. (Faries Lake property)	Cecil Township (Cu, Zn, Ni, PGE)	DD
54	Platinum Group Metals Ltd. (Moshkinabi Lake property)	Roberta and Herbert townships (Cu, Ni, PGE)	DD
55	Platinum Group Metals Ltd.–East West Resource Corporation (Pebble property)	Circle Lake (PGE)	GC, DD
56	Platinum Group Metals Ltd.–East West Resource Corporation (Disraeli–Seagull property)	Leckie Lake (PGE, Cu, Ni)	AEM, AM, GC, GEM, GL, Grav, DD
57	Platinum Group Metals Ltd.–East West Resource Corporation–Maple Minerals Ltd. (Lac des Iles River property)	Shelby Lake (PGE)	DD, Samp
58	Redstar Gold Corp. (Sunshine property)	Miranda Lake (Au)	Pr, Samp
59	Ripple Lake Diamonds Inc. (Ripple Lake property)	Ripple Lake, Walsh Township (IM)	GC, GL, Samp
60	RJK Exploration Ltd. (Martin Bay property)	Haines Township (Au)	Str, Samp
61	RJK Exploration Ltd. (Wedge property)	Laurie Township (Au)	DD
62	RJK Explorations Ltd.–GLR Resources Inc. (Stares–Calvert property–Aldina property)	Aldina and Sackville townships (Cu, Zn, Pb, Ag)	AEM, GL, DD, Samp
63	Sande, D. and Stewart, E. (Sande–Stewart property)	Sawbill Bay (Au)	Str, Tr, Samp
64	Staccato Gold Resources Ltd. (Shebandowan property)	Swamp River (Au)	GL, Pr, DD, Samp
65	TriGold Resources Corp. (Big Duck Lake property)	Rope Lake–Pays Plat (Au)	Pr, Str, Samp
66	ValGold Resources Ltd. (Tower Mountain property)	Conmee Township (Au)	GL, Pr, Str, DD, Samp
67	Wahl, R. (Heron Bay property)	Pic Township (diamonds)	Pr, Samp
68	Wahl, R. and Renner, R. (Fire Mountain properties)	Tuuri Township (Au)	Pr, Samp
69	Wilkinson, D. (Marathon spectralite building stone property)	Marathon (IM)	DD

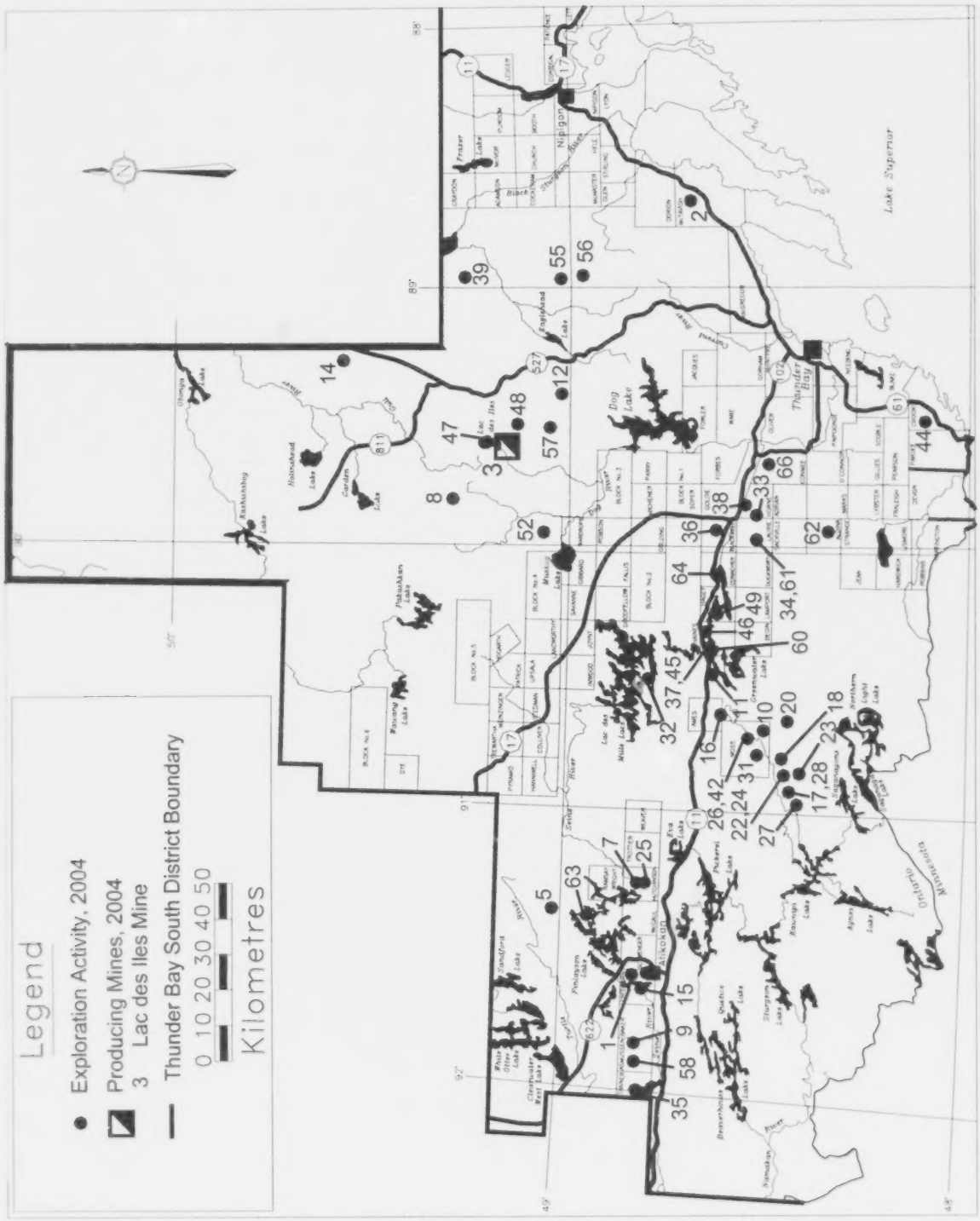

Figure 1. Thunder Bay South Resident Geologist's District (western portion), exploration activity 2004.

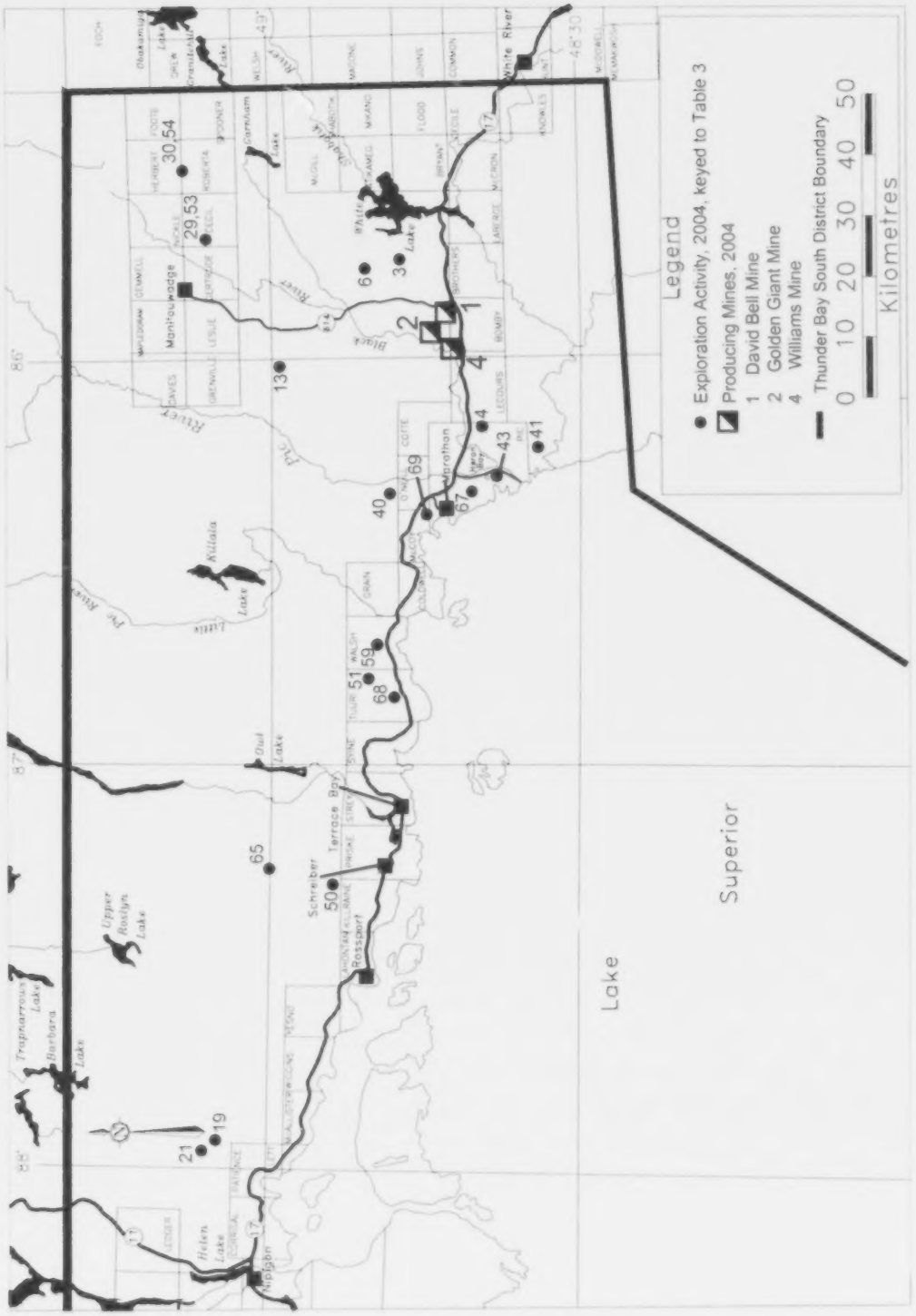

Figure 2. Thunder Bay South Resident Geologist's District (eastern portion), exploration activity 2004.

RESIDENT GEOLOGIST PROGRAM STAFF AND ACTIVITIES

The Thunder Bay South District is staffed by B.R. Schnieders, Regional Resident Geologist, J.F. Scott, District Geologist, M.A. Magee, District Support Geologist, R. Tuomi, Data Compilation Geologist, D. Wyant, GIS/Data Specialist, and C. Komar, Administrative Assistant.

The Thunder Bay South Resident Geologist Program (RGP) dealt with more than 4050 inquiries from the mining sector, other government agencies and the general public. Bi-weekly to monthly visits were made to the Marathon satellite office from May until October, usually on Tuesday afternoons. Service was also provided to clients in the Thunder Bay Drill Core Library, as well as remote core storage facilities in Conmee Township (30 km west of Thunder Bay) and in Marathon.

Thunder Bay South RGP staff conducted 101 property visits to 58 properties in 2004 (Table 4). Thirteen field trips were conducted or attended. Five posters displays were contributed to, assembled and staffed, including the Cordilleran Roundup in Vancouver, the Prospectors and Developers Association of Canada convention in Toronto, the Northwestern Ontario Mines and Minerals Symposium in Thunder Bay and various open houses and conferences. Ten technical presentations were delivered. Logistical support and field assistance were given to Ontario Geological Survey geoscientists conducting field work in the Thunder Bay South District.

R. Tuomi, Data Compilation Geologist, Thunder Bay, posted data, including exploration activity and recommendations, on the RGP web site. He also worked on preparing digital maps for the web site, reconstructing the RGP web site, and entering and editing of the Mineral Deposit Inventory database model.

B.R. Schnieders and J.K. Mason attended the 2004 Cordilleran Roundup held in Vancouver, British Columbia. A provincial booth, filled with rock samples, cut and polished rock slabs and drill core, display material, handouts, recommendations, and promotional materials, was manned. Commodities such as gold, PGE, diamonds, rare metals, base metals, and LNRGI products were highlighted.

B.R. Schnieders and J.F. Scott are representatives on the Lake Nipigon Region Geoscience Initiative Science Committee. J.F. Scott was actively involved with the application of global positioning system (GPS) technology (e.g., property, road, detailed grid, stripped area, and air photo base maps), as well as Provincially Significant Mineral Potential (PSMP) maps and geographic information systems (GIS) information. Approximately 45 MDI records were entered and edited in 2004. B.R. Schnieders gave "Exploration and Mining Activity in Northwestern Ontario" presentations to the Northern Ontario Development Network (NODN), Northern Development Staff, Marathon, and the Thunder Bay Municipal League. Desiree Wyant was hired as the GIS/Data Specialist, and produced maps for the Regional Land Use Geologist as well as the Resident Geologist Program.

Table 4. Property visits conducted by the Thunder Bay South Resident Geologist's Office in 2004.

Number	Property or Occurrence with Commodity	Number	Property or Occurrence with Commodity
1	Agate Point: Industrial Minerals	30	Nipigon Limestone Lake: Industrial Minerals
2	Aldina property: Cu, Zn, Au, Ag	31	North Coldstream Mine: Cu, Ag
3	Alvey occurrence: Zn, Pb, Ag	32	North Rawluck occurrence: Cu, Ag
4	Ardeen Mine: Au	33	Pillar Lake: U, Th
5	Big Duck Lake property: Au	34	Prairie River/Steel River: Cu, Zn, Pb, Ag
6	BlackFox Lake occurrence: Au	35	Puff Island: Cu
7	Bylund occurrence: Au	36	Richards property: Cu
8	David Bell Mine: Au	37	Rita Bolduc occurrence: Cu, Ni
9	Eaglehead Quarry: Industrial Minerals	38	Sande–Stewart occurrence: Au
10	East Coldstream prospect: Au	39	Seagull Lake Intrusion Core: Cu, Ni, PGM
11	Faries Lake Extension occurrence: Cu	40	Shabaqua Conglomerate: Au
12	Frank West/Pistol Lake occurrence: Au	41	Shack Lake: Industrial Minerals
13	Gold Creek occurrence: Au	42	Shebandowan (Inco leases): Cu, Ni, PGM
14	Gold Range/Harkness Hays occurrence: Au	43	Shuniah Mine: Ag

Number	Property or Occurrence with Commodity
15	Golden Giant Mine: Au
16	Great Lakes Nickel prospect: Cu, Ni, PGM
17	Greenwater Lake occurrence: Au, Cu, Ni
18	Hayne's Shebandowan occurrence: Au, Cu, Mo
19	Hemlo Highway Section: Au
20	Heron Bay Mine: Au, Ag
21	I-Zone occurrence: Au
22	Kukkee–Burchell Lake occurrence: Au, Cu, Zn
23	Larose occurrence: Au, Zn, Pb
24	Marathon PGM-Cu prospect: PGM, Cu
25	McCrindle Marble: Industrial Minerals
26	McQuaig Float occurrence; Cu, Ni, PGM
27	McTavish Red Sandstone: Industrial Minerals
28	Moshkinabi Lake: Cu, Ni, PGM
29	Murchison and Logan Islands: Industrial Minerals

Number	Property or Occurrence with Commodity
44	Simard–Swetz: Pb, Zn, Au
45	Simpson Island: Industrial Minerals
46	Snodgrass–Moss Lake property: Au
47	St. Ignace Island: Industrial Minerals
48	Starhill occurrence: Cu, Zn, Pb, Ag
49	SunGold occurrence: Au
50	Sunset occurrence: Industrial Minerals
51	Three Mile Bay Core: Cu, Zn
52	Tilly Creek occurrence: Au, Ag, Cu
53	Tower Mountain property: Au
54	Vanguard occurrence: Cu, Zn, Ag, Au
55	Vert Island Quarry: Industrial Minerals
56	Whalen occurrence: Cu, Zn, Au
57	Wilkinson Spectralite: Industrial Minerals
58	Williams Mine: Au

PROPERTY EXAMINATIONS

Big Duck Lake Property

The Big Duck Lake property is located 25 km north of Schreiber in the Schreiber–Hemlo greenstone belt, a portion of the Wawa Subprovince. The large 2904 ha property has been optioned by Tri-Gold Resources Corp. Approximately 5 km to the southwest, Inmet's Winston Lake Division Mine (copper-zinc) contained 2.68 million tonnes of 1.05% copper, 12.05% zinc, 31.37 g/t silver, and 1.07 g/t gold (MacDonald 2003). Prospecting in the Big Duck Lake area dates back to 1885, and more than 40 separate gold occurrences have been identified on the property, including the Coco–Estelle zone, with a historical drill-indicated reserve of 53 700 tonnes grading 10.7 g/t gold (Lewis 1993). (Note: The resource estimate does not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101 and are historic resource figures generated by past workers).

Quartz porphyry sills intrude mafic metavolcanic rocks. Pye (1964) mapped the area for the Ontario Department of Mines, and showed a series of porphyry sills and bodies 5 km by 2 km in size. The area was earlier mapped by Hopkins (1922) and Bartley (1942), who suggest that the mineral deposits of the area may be genetically related to the quartz porphyry sills. The sill-like porphyry bodies trend easterly and dip steeply 65 to 70° N, and are considered to have formed late in the tectonic history. A problematic felsic fragmental unit is found on the northern contacts of many of the porphyry bodies, and may have developed through *in situ* tectonic brecciation (Ritcey 1992) or represent an intrusive-extrusive, synvolcanic sublayer intrusive (Patterson et al. 1984). Another interpretation is that these felsic fragmental rocks, which contain quartz porphyry fragments, as well as biotite and chromian muscovite fragments (Ritcey 1992), represent magmatic-hydrothermal breccias, possibly associated to a deep-seated, porphyry system similar to Hemlo (Johnston 1996).

The property was visited by the senior author in 2004, and a traverse from the Church occurrence (UTM Zone 16, 476780E, 5427045N, NAD 27) approximately 2 km to the Sjolander occurrence (UTM Zone 16, 478685E, 5426774N) was made. Tri-Gold has conducted considerable stripping and water washing. In the Trench 10 area, epidote-altered pillowed metavolcanic rocks were observed intruded by quartz porphyry sills up to 30 m in width. Sulphide-bearing shear zones striking 260/30N were observed up to 3 m in width. Silicification and albitization were observed in several locations. Grab sample 04-BBD-01 (UTM Zone 16, 476785E, 5427129N), collected from a gossanous, sulphide rich shear zone, assayed 0.03 ounce per ton gold, 1580 ppm copper and >5000 ppm zinc (zinc analyses were not complete at the time of writing). Grab sample 04-BBD-02 (UTM Zone 16, 476754E, 5427129N) of a silicified sulphide schist zone assayed 0.23 ounce per ton gold and minor base metal values. A similar mineralized setting was sampled at Trench 7 (UTM Zone 16, 477030E, 5427276N), where a sulphide-rich zone with

20% sulphides was grab sampled (04-BBD-03), and assayed 0.11 ounce per ton gold, 895 ppm copper and >5000 ppm zinc.

A new gold zone, the EXT zone (UTM Zone 16, 477013E, 5426973N, NAD 27), was discovered in 2004, likely an extension or subparallel zone to Trench 7. The porphyry-metavolcanic contact strikes 270/56N and a prominent 324° cross structure was evident. Mineralization is hosted in an altered quartz-albite (feldspathic) intrusive, including a mud vein or fault gouge within a 3 m shear. The gossan zone contains hematite, chlorite, biotite and sulphides, mainly pyrite, and was nonmagnetite. A chip sample (04-BBD-04) across 2 m of the zone assayed 0.09 ounce per ton gold. Approximately 30 m south, a second parallel shear zone up to 5 m wide, contains a limonite-hematite fault gouge at the contact with quartz porphyry. The sheared zone has a maximum width of 5 m. Grab sample 04-BBD-05 from the fault gouge assayed 0.03 ounce per ton gold.

Samples were also collected from the Coco–Estelle zone. The Coco–Estelle deposit is described by Pye (1964):

> The Coco-Estelle deposit is in hornblende schist, along or close to the north contact of a large sill-like body of quartz porphyry. It strikes N.80°-85°E. and dips 65°-70°N. It has been tested in the diamond-drillholes, at intervals of 15-250 feet, over a length of 950 feet. Surface exposures and the drill cores show it to be a zone, averaging 15-20 feet in thickness, of hornblende schist with about 5 percent disseminated fine-grained pyrite and small amounts of pyrrhotite, chalcopyrite, and sphalerite. The mineralized schist is cut at frequent and irregular intervals by thin stringers and "threads" of quartz and quartz carbonate.

The senior author collected samples from the Coco–Estelle on past visits (1996), and after cutting and polishing the samples noted a similarity between the Coco–Estelle biotitic alteration (assayed 0.17 ounce per ton gold) zone and the biotite-fragmental zone in the hanging wall of the Hemlo ore zone (Golden Giant Mine sample assayed 2 g/t gold). Both zones contain schistose, folded, faulted and laminated biotite and quartz/feldspathic seams, with disseminated pyrite and green mica. The Coco–Estelle zone contained hornblende-biotite-chlorite layering, which can be weakly magnetic, and quartz and carbonate seams or veinlets. The Hemlo biotite-fragmental zone has magnetic layers (likely magnetite) and has no appreciable carbonate present. It is the senior author's opinion that the biotite-hornblende zone represents alteration near and at the contacts with the quartz-porphyry, and can affect both the mafic metavolcanic rocks and the quartz porphyry. Ritcey (1992) describes biotite alteration, associated with sulphide (pyrite) mineralization, occurring at the margins of the felsic intrusions and extending 10 to 20 m into the mafic and felsic rocks on either side of an intrusion contact. Ritcey (1992) also described quartz, muscovite, hornblende, chlorite, carbonate, and tourmaline alteration within rocks of the Big Duck Lake area.

Samples of the altered and unaltered quartz porphyry, mineralized zones and biotite alteration were collected, and whole rock analyses and trace-element geochemistry were performed. Analyses were compared to analyses of rocks from the Hemlo deposit, including the biotite-fragmental rock at Hemlo. Interesting to note that sample 85-TLM-5612 (Muir 1997) of the schistose, biotitic fragmental rock containing green mica from the Williams A zone, assayed 580 ppb gold, 190 ppm vanadium and 103 ppm chromium, while the biotitic-altered Coco–Estelle sample (04-BBD-6b) assayed 0.14 ounce per ton gold, 188 ppm vanadium and 25.6 ppm chromium. Samples of the Big Duck Lake altered porphyry intrusions and sericite schist indicates a silica and sodium depletion, and an enrichment in MgO, CaO, K_2O, iron (sulphides), copper (>6000 ppm copper), zinc, molybdenum (252 ppm), vanadium, and tungsten (1131 ppm). These felsic intrusive rocks appear to have both a base metal and a magmatic-epithermal overprint (*see* also Kukkee–Burchell property writeup in this report).

And finally, the less or "unaltered" quartz porphyry grab sample collected (Sample 04-BBD-6a) from the Coco–Estelle property assayed 0.01 ounce per ton gold, 418 ppm copper and 9 ppm molybdenum, while the altered, biotitic equivalent (Sample 04-BBD-6b) assayed 0.14 ounce per ton gold. Stripping to the southeast of the Coco–Estelle discovered the Mick zone (UTM Zone 16, 477319E, 5427044N) where a quartz porphyry sill and sulphidized, mafic schist (altered porphyry) are in contact. A 1 to 2 m wide easterly striking shear zone displayed sericite-muscovite to pervasive biotite alteration and a sulphide schist with up to 20% sulphides. Surprisingly the sericite-muscovite sample (04-BDD-7a) with 3 to 5% sulphides, assayed 0.13 ounce per ton gold, 3017 ppm copper and 1131 ppm tungsten. The sulphide-rich sample (04-BBD-7b) assayed 0.02 ounce per ton gold and 2.3 ounce per ton silver. Samples collected from the Sjolander occurrence area, including quartz-carbonate veins (04-BDD-08, -09, -10 and -11), assayed up to 0.01 ounce per ton gold.

Kukkee–Burchell Property

The Kukkee–Burchell property is located in the Shebandowan greenstone belt, approximately 120 km west of the city of Thunder Bay, and 3.4 km southwest of the Highway 517/802 junction (UTM Zone 15, 679302E, 5387145N, NAD 27). The property was staked by K. Kukkee and is currently optioned to Canadian Golden Dragon Resources Ltd. The property is located approximately 2 km east-northeast of the North Coldstream Mine, which produced 102 million pounds of copper, 440 000 ounces of silver and 22 000 ounces of gold from 1903 until 1967 (Aubut et al. 1990). The East Coldstream deposit is located 2 km to the southeast and hosts a historical resource of 7.6 Mt @ 2 g/t gold (Alto Ventures News Release, October 1, 2002).

Previous work on the property includes exploration during production periods while the North Coldstream Mine operated. Shield Development Company performed underground exploration on the mine property from 1957 until 1962. P.E. Giblin mapped the area for the Department of Mines in 1960 (Giblin 1964) and I. Osmani mapped the area in 1997.

M. Lavigne and J. Scott performed detailed mapping on the North Coldstream mine site. O. Belisle conducted prospecting in the 1980s. The area was staked, prospected, stripped and sampled by K. Kukkee in 2003, and narrow shear zones up to 0.25 m returned gold values up to 10.896 g/t gold (Kukkee 2003, Assessment Files, Ministry of Northern Development and Mines, Thunder Bay). Canadian Golden Dragon Resources Ltd. is planning induced polarization geophysical surveys, stripping and diamond drilling for 2005.

Gold mineralization is hosted within sheared and altered felsic metavolcanic rocks, which have been intruded by quartz-feldspar porphyry, diorite and gabbro. Mapping by Osmani (1997) (Map 2622) indicates the area is underlain by felsic volcanoclastic rocks (lapilli-tuff), quartz-sericite schist, diorite, gabbro and quartz-feldspar porphyry. Northeast (35°) and east-northeast-trending (50°) lineaments or faults transect the area. An east-northeast-trending contact between felsic metavolcanic rocks and mafic metavolcanic rocks appears to be both folded and faulted. The property is located east of the Burchell Lake Stock, a late felsic intrusive pluton, possibly of a high level affinity.

Field investigation observed a quartz-eye phyric sericite schist with shards of a green mica present in several locations. Quartz porphyry dikes up to 2 m wide intrude felsic metavolcanic rocks, striking 74° and dipping vertically. Sulphide-rich shear zones up to 1 m in width were observed; however, sampling by K. Kukkee indicated gold mineralization over narrow widths of up to 0.25 m. Kink banding and chloritic slips were observed in the felsic metavolcanic rocks. A mineral lineation, a possible axial planar cleavage, was measured at 100/30W. Green mica shards or clasts up to 1.5 cm in length and 1 mm in width were observed in the felsic fragmental rocks. A fine-grained diorite unit has also intruded the felsic fragmental rocks and appears to be intruded by the quartz porphyry dikes.

The senior author noted strong similarities with rock types in the Hemlo area. Pyritiferous, sericite schist with sulphides up to 15% was observed in several locations on the Kukkee–Burchell property, and in several locations included green mica shards or clasts. This rock is similar in appearance to the Barren Sulphide zone within the Hemlo highway assemblage. A sample collected from the Kukkee–Burchell sericite schist in 2003 assayed 261 ppb gold, 3 ppm silver, 93 ppm copper, and 1396 ppm zinc. This assay suggested a base metal signature typical of a stringer zone of a volcanogenic massive sulphide deposit.

Further sampling and whole rock analyses were conducted in 2004. Quartz porphyries from the Kukkee–Burchell property were compared to Hemlo quartz porphyries (Hemlo ore zone and Barren Sulphide zone). The Kukkee–Burchell property displayed sodium depletion (1.01 and 1.21% Na_2O) as well as enriched levels of potassium (3.83% K_2O), while the Hemlo ore zone displayed a potassium enrichment of up to 4.44% K_2O. Trace-element analyses indicated that the Hemlo ore zone porphyry displayed barium (16 741.50 ppm Ba), molybdenum (493.44 ppm Mo), stibnite (197.81 ppm Sb), vanadium (325.23 ppm V) and tungsten (38.10 ppm W) enrichment with samples assaying as low as 46.03 ppb gold and as high as 24 350 ppb gold (Schnieders et al. 1988). Comparatively, the Barren Sulphide zone porphyry contained up to 668 ppm barium, 5.38 ppm molybdenum, 0.25 ppm stibnite, 39 ppm vanadium (earlier samples assayed up to 88 ppm V), 11.6 ppm tungsten and 64.41 ppb gold. The Kukkee–Burchell porphyry displayed copper (347.30 ppm Cu), zinc (710.31 ppm Zn), silver (9 ppm Ag), cadmium (2.16 ppm Cd) and gold (775.77 ppb Au) enrichment. Both the Hemlo and Kukkee–Burchell porphyries had similar chromium values ranging from 27.2 to 47.4 ppm chromium.

The Hemlo porphyries display a magmatic-epithermal overprint with enrichment in potassium, barium, molybdenum, vanadium, stibnite, chromium and gold while the Kukkee–Burchell porphyries display a base metal (VMS) overprint including potassium, copper, zinc, silver, cadmium, and gold enrichment as well as a sodium depletion. Numerous samples (eight) from the Kukkee–Burchell property displayed gold enrichment with assays between 40 ppb and 775 ppb gold. A narrow, sulphide-rich shear assayed by K. Kukkee assayed up to 10.896 g/t gold. The Barren Sulphide zone porphyry at Hemlo sits stratigraphically above the Hemlo ore zone and contains low gold values (anomalous 64 ppb) compared to the Hemlo ore zone. Nonetheless, these mineralized and anomalous quartz-porphyries, and quartz-sericite schists represent products of shearing, deformation and alteration, and can act as conduits for mineralizing solutions. While gold, vanadium, molybdenum, barium, arsenic and mercury are considered pathfinder elements for Hemlo-style mineralization at the Kukkee–Burchell property, gold, silver, zinc, and copper might represent pathfinder elements for base metals and gold mineralization. Mineralized felsic porphyries and pyritiferous sericite schists should be thoroughly explored for their gold and base metal potential both in the Hemlo and Shebandowan greenstone belts. Traditional prospecting, sampling, stripping, soil and lithogeochemical surveys, induced polarization geophysical surveys, radiometric surveys, and diamond drilling are recommended as exploration tools.

Marathon Copper-PGM Deposit: Marathon PGM Corporation

The RD zone of the Marathon deposit (UTM Zone 16, 550000E, 5403250N, NAD 83) is located in O'Neill Township, approximately 10 km northeast of Marathon on the eastern margin of the Coldwell Complex. It is accessible by the Pic River bush road north from Highway 17. The property consists of two crown leases and three unpatented mining claims covering 1654 ha. The Marathon deposit is an advanced exploration property wholly owned by Marathon PGM Corporation.

Exploration for copper and nickel deposits on the Marathon deposit began in the 1920s, and continued into the 1940s, with the discovery of magnetite and chalcopyrite occurrences. The property underwent several phases of exploration and economic evaluation between 1963 to 2004. Anaconda Canada Exploration Inc. completed 173 diamond drill holes (36 351 m of core) in the 1960s, Fleck Resources Ltd., a subsidiary of Polymet, completed 37 diamond drill holes (3615 m) in the 1980s, and Geomaque Explorations Ltd. completed 15 diamond drill holes (3158m). The estimated resource, as calculated by the data acquired from the drilling listed above, is 24.3 Mt grading 1.22 g/t palladium, 0.31 g/t platinum, 0.10 g/t gold, 1.85 g/t silver, 0.37% copper and 0.03% nickel over approximately 1800 m of strike length (Roscoe and Agnerian 2004).

The Coldwell Complex is an alkalic plutonic complex emplaced along a northeast-trending failed arm (Trans Superior Tectonic zone) of the Mid-Continent Rift system during the Mesoproterozoic. It is surrounded by Archean supracrustal and gneissic rocks of the Wawa Subprovince. The Coldwell Complex consists of a western syenite to syenodiorite unit, a central layered ferroaugite-amphibole syenite, rimmed to the east and northeast by a layered gabbroic unit known as the Eastern Gabbro (Dahl et al. 2001).

The northern half of the Marathon deposit is underlain by the varitextured Eastern Gabbro, which includes rafts of layered gabbro, mafic volcanics, and lithic fragments. The greatest enrichment of PGM-copper is found in chalcopyrite and pyrrhotite-bearing coarse-grained basal gabbro in contact with volcanic rocks to the east. The main body of PGM-copper mineralization has a strike length of about 1.9 km, dips 30 to 40° to the west, and has a true thickness ranging from 15 to 100 m. The average palladium to platinum ratio throughout the deposit is 4:1 and PGE values correlate well with copper.

The southern half of the Marathon deposit is underlain by the Two Duck Lake Gabbro (Dahl et al. 2001), which has been described as a copper and PGE-bearing gabbro that is 700 m wide and dips gently to the west. The RD zone, BR zone, and Southern Resource area cover the eastern contact of the gabbro with the volcanic rocks. The gabbro is varitextured and exhibits coarse-grained to pegmatitic pods that are anomalous to well mineralized with copper and PGE (press release, October 12, 2004 and November 2, 2004). The southern half has been underexplored.

Marathon PGM Corporation completed a rigorous exploration program in 2004 with the completion of 32 diamond-drill holes (approximately 4000 m) in four target areas south of the resource zone described above and in the southern half of the Coldwell Complex. The resource listed above does not take into account the results from the drilling program completed in 2004.

Eight diamond-drill holes were completed on the RD zone in 2004. A grab sample collected by the authors assayed 1.1 g/t palladium, 0.31 g/t platinum, and 0.11 g/t gold. Mineralization in the RD zone is flat lying, with highlights including Hole M-04-03, which assayed 1.09 g/t palladium, 0.32 g/t platinum, 0.09 g/t gold and 0.12% copper over 25 m and M-04-06, which assayed 0.93 g/t palladium, 0.32 g/t platinum, 0.11 g/t gold and 0.22% copper over 10 m (press release, January 7, 2005).

At the BR zone, located approximately 450 m to the north of the RD zone (UTM Zone 16, 550175E, 5403750N), six diamond-drill holes were completed in 2004. Diamond-drill hole M-04-21 assayed 2.12 g/t palladium, 0.78 g/t platinum, 0.21 g/t gold and 0.19% copper over 43 m (press release, December 2, 2004). A grab sample collected by the authors assayed 0.86 g/t palladium, 0.42 g/t platinum and 0.23 g/t gold.

At the Malachite zone, located approximately 300 m to the west of the RD zone (UTM Zone 16, 549600E, 5403350N), 10 diamond-drill holes were completed on several stripped areas in 2004. The Malachite zone contains the location of a historic hand-dug pit of unknown vintage. Malachite staining of the coarse-grained varitextured gabbro is prolific. Diamond Drill Hole M-04-21 assayed 2.12 g/t palladium, 0.78 g/t platinum, 0.21 g/t gold and 0.19% copper over 46 m, including 34 m grading 2.64 g/t palladium, 0.99 g/t platinum, 0.25 g/t gold and 0.21% copper. M-04-12 assayed 1.20 g/t palladium, 0.37 g/t platinum, 0.10 g/t gold and 0.28% copper (press release, October 12, 2004).

Eight diamond-drill holes were completed at the Southern Resource area, located approximately 900 m to the north of the RD zone (UTM Zone 16, 550375E, 5404375N). Two mineralized zones were intersected with some copper-PGE grades that will enable additional resource estimates. The upper mineralized zone is flat lying and between 2.0 to 7.5 m thick. The lower copper zone has been extended to the south by 75 m. Hole M-04-30 assayed 0.74 g/t palladium, 0.30 g/t platinum, 0.09 g/t gold and 0.50% copper over 22 m. Hole M-04-32 assayed 2.76 g/t palladium, 0.58 g/t platinum, 0.21 g/t gold and 0.44% copper over 8 m (press release, December 17, 2004).

The exploration program completed by Marathon PGM Corporation through the summer and fall of 2004 has the potential to significantly increase the estimated resource listed above, and has succeeded in extending the area of exploration further south with positive trenching and diamond drilling results reported.

The northern, eastern and central gabbros of the Coldwell Complex have excellent potential to host large tonnage copper-PGE deposits and are currently the focus of numerous exploration programs. The Bermuda property, owned by Benton Resources Corp., is located north of the Marathon copper-PGE deposit and straddles 12 km of the Eastern Gabbro of the Coldwell Complex. It is currently being explored for layered oxide reef-type deposits of which two occurrences have been previously identified (the Skipper zone and the Four Dam Lake showing). Diamond drilling in 2004 intersected 21.7 m grading 1.3 g/t platinum, palladium and gold (press release, March 10, 2004).

Moshkinabi, Ice Cream Lake, Faries Lake South Extension and Peacock Road (North Rawluck) Occurrences

Numerous mineral occurrences have been discovered in the Moshkinabi–Faries Lake area. The area is located approximately 20 km east of Manitouwadge, along the northern margin of the Black Pic Batholith Complex (BPBC). Ultramafic rocks of the Faries Lake–Moshkinabi Lake intrusive complex (Williams and Breaks 1989; 1990a, 1990b) are associated with the eastern extension of the Manitouwadge greenstone belt (Schnieders et al. 2000). The intrusive and supracrustal rocks form thin screens within the enveloping tonalitic terrain (Williams and Breaks 1989). The Faries Lake–Moshkinabi Lake intrusive complex and associated Manitouwadge greenstone belt appear to represent a disrupted synform, displaying multiphase deformation (i.e., refolded folds) along a northeast-trending fold axis, similar to the Manitouwadge synform. The area was first recommended for copper-nickel-PGE exploration by Schnieders and Smyk (1990) and by Schnieders et al. (1991) following reconnaissance mapping by Williams and Breaks (1989; 1990a, 1990b). A gabbro-hosted, copper-nickel mineralized zone, the Gionet

occurrence, was described by Schnieders et al. (1996) along the western margin of the Faries Lake–Moshkinabi Complex. Copper-bearing, garnitiferous, altered, mafic metavolcanic rocks (Cecil Township sulphide occurrence), approximately 1 km southeast of the Gionet copper-nickel occurrence, were described by Schnieders and Smyk (1994).

MOSHKINABI LAKE EXTENSION OCCURRENCE

At the Moshkinabi Lake Extension, several new sulphide occurrences (UTM Zone 16, 605602E, 5442789N, NAD 27) were discovered by G. and M. Gionet in 2003and 2004 by Beep Mat prospecting, approximately 15 m northwest of previous stripped trenches. Mafic and ultramafic rocks intrude mafic metavolcanic rocks. All units display strain and folding, and the mafic metavolcanic rocks display epidote alteration. Mafic gneisses and foliated gabbro and pyroxenite strike 320° and dip 70° E. Remobilized chalcopyrite-rich pods were observed in a foliated and schistose ultramafic rock. Three trenches follow the mineralized zone for up to 100 m. Several boudinaged quartz veins up to 25 cm were observed. Sample 04-BME-01 (UTM Zone 16, 605548E, 5442833N) was collected of an ultramafic schist with net-textured pyrrhotite and chalcopyrite, and assayed 6680 ppm copper, 2810 ppm nickel, 1170 ppb palladium, 148 ppb platinum, 45 ppb gold, and 5 ppm silver. A second pit (UTM 16, 605533E, 5442863N) contained sheared gabbro to pyroxenite, with a 2 m section containing up to 15% disseminated, net-textured sulphides. Sample 04-BME-02 assayed 4970 ppm copper, 3880 ppm nickel, 1480 ppb palladium, 231 ppb platinum, 20 ppb gold and 5 ppm silver. Sample 04-BME-03 sampled a chalcopyrite-rich stringer zone, striking 60° and is near the contact with epidotized mafic metavolcanic rocks. Grab sample 04-BME-03 assayed 1.93% copper, 2580 ppm nickel, 1300 ppb palladium, 146 ppb platinum, 4 ppb gold and 8 ppm silver. The area appears to be near a fold closure or in the nose of a shallowly plunging fold (FA 90/40). A pod of near massive sulphides (UTM Zone 16, 605602E, 5442789N), consisting of a pyrrhotite lens up to 2 by 3 m in size, was sampled. Sample 04-BME-04 assayed 4790 ppm copper, 9250 ppm nickel, 2800 ppb Palladium, 288 ppb Platinum, 8 ppb gold and 5 ppm silver.

Past prospecting in the Moshkinabi Lake area by G. and M. Gionet in 1999 led to the discovery of the Moshkinabi Lake occurrence. The copper-nickel-PGE occurrence was discovered along the northern margin of the Black Pic Batholithic Complex. The Moshkinabi property was optioned to Freewest Resources Canada Inc. who discovered a PGE-anomalous, sulphide-mineralized zone (Kejimalda zone) that was traced over a strike length of 3 km, ranging between 10 and 150 m in width (press release, September 1, 2000). The highest assay obtained from the property assayed 2.55 g/t platinum group elements (1.93 g/t palladium, 0.62 g/t platinum) (The Manitouwadge Echo, September 20, 2000). Mineralization is associated with the contact between hornblendite and an overlying unit of hornblende melagabbro. The unit contains between 1 and 4% disseminated and net-textured pyrrhotite, chalcopyrite and pentlandite. Beep Mat prospecting by G. and M. Gionet in 2003 extended the Moshkinabi sulphide zone located near Manitouwadge. Stripping and trenching have exposed nearly massive sulphide mineralization for more than 100 m along strike, hosted by a deformed mafic to ultramafic intrusive complex. Grab samples have assayed as high as 14.15% copper, 0.91% nickel, 3.04 g/t palladium, 0.54 g/t platinum and 0.20 g/t gold (Schnieders et al. 2004). The property was optioned to Platinum Group Metals Ltd. in 2003, who conducted a diamond-drilling program.

ICE CREAM LAKE OCCURRENCE (R. GIONET)

R. Gionet discovered several new sulphide occurrences along the Ice Cream Lake road. Past work on the Ice Cream Lake property by G. and M. Gionet in 2000 returned results as high as 2344 ppm copper, 183 ppm zinc, 471 ppm nickel, 38 ppb palladium, 34 ppb platinum and 30 ppb gold. Past work by Noranda Exploration had encountered up to 952 ppm copper and 678 ppm nickel from a series of pits and trenches known as the Moshkinabi sulphide zone. A new sulphide zone (UTM Zone 16, 604848E, 5442556N, NAD 27) is exposed over 150 m in strike length. The sulphide zone strikes 245° and appears associated with sheared gabbro. Up to 10% sulphides, including pyrrhotite and chalcopyrite, were present. Grab sample 04-BIC-01 assayed 2.38% copper, 182 ppm nickel, 256 ppm zinc, 13.5 ppb palladium and 4 ppb platinum, nil gold and 6 ppm silver. A second sample of a pyrrhotite-rich pod near the iron formation (Sample 04-BIC-02) assayed 596 ppm copper, 477 ppm nickel, 93 ppm zinc, 9 ppb palladium, nil platinum, 12 ppb gold and 4 ppm silver. A narrow chert-magnetite iron formation was also observed striking 355°. Sample 04-BIC-03 of the iron formation assayed 294 ppm copper, 50 ppm nickel, 132 ppm zinc, 10 ppb palladium, 4 ppb platinum, nil gold and 2 ppm silver.

FARIES LAKE SOUTH EXTENSION

The Faries Lake occurrence (McKay 1994) was drilled by Noranda in 1987; 0.83% copper and 0.02% zinc were intersected over 3.5 feet, associated with narrow iron formation. Beep Mat prospecting by G. and M. Gionet in 2002, 2003 and 2004 discovered several new sulphide occurrences to the south of the known Faries Lake copper occurrences. The sulphide zones are exposed over a 400 m strike length and are associated with felsic metavolcanics, iron formation, gabbro, bladed gneiss and tonalite. One sulphide zone up to 3 m wide was observed hosted in a banded, cherty, siliceous unit, containing magnetite (lean iron formation). The sulphide zone strikes 110° and chalcopyrite stringers strike 198°. A prominent mineral lineation was measured at (280/44N). The sulphides appear to be remobilized and crosscut the host rocks and the lean iron formation. Sample 04-BFL-01 (UTM Zone 16, 600916E, 5436387N NAD 27) was a chip sample taken across 2 m of the magnetic, sulphide zone and assayed 2760 ppm copper, 574 ppm nickel, 52 ppm zinc, 21 ppb palladium, 3 ppb platinum, 20 ppb gold and 5 ppm silver. A second trenched area on the west side of a swamp exposed a 3 m wide sulphide zone again associated with banded oxide facies, iron formation. The copper-rich zone strikes 172° and dips 45° E. A grab sample (04-BFL-02) of the chalcopyrite-rich zone was collected and assayed 6.66% copper, 258 ppm nickel, 445 ppm zinc, 30 ppb palladium, 3 ppb platinum, 68 ppb gold and 18 ppm silver. A second sample (04-BFL-03) of the pyrrhotite-rich zone assayed 7940 ppm copper, 1760 ppm nickel, 52 ppm zinc, 113 ppb palladium, 5 ppb platinum, and nil gold.

PEACOCK ROAD (RAWLUCK LAKE PROPERTY)

Beep Mat prospecting in the Peacock road area (Rawluck Lake occurrences, Schnieders et al. 1996; Rawluck Lake property, Schnieders et al. 1998) discovered and extended several known sulphide zones and quartz veins. Previous sampling on a pyrrhotite- and chalcopyrite-bearing quartz vein discovered by D.B. McKay (1994) returned values of up to 2% copper and 1.5 ounces per ton silver (Schnieders et. al. 1996). Sampling of quartzo-feldspathic hornblendite assayed 2.12% copper, 1465 ppm nickel, 45 ppm zinc, 14 ppb palladium, 5 ppb platinum, 8 ppb gold and 580 ppm cobalt. A sample of a quartzo-feldspathic zone in gabbro assayed 1.94% copper, 600 ppm nickel, 70 ppm zinc, and 1170 ppm cobalt (Schnieders et al. 1998). New stripping exposed quartz veins (UTM Zone 16, 601599E, 5441791N NAD 27) varying from 25 cm to 1 m wide and striking 352°. The vein is hosted by diorite, hornblendite, quartzo-feldspathic pods and pegmatite, gabbro and bladed gneiss, and contains chalcopyrite-rich sections of up to 7.5 cm wide. A grab sample (04-BPR-01) of the chalcopyrite-rich quartz vein assayed 9.91% copper, 372 ppm nickel, 417 ppm zinc, 2 g/t palladium, nil platinum, 13 ppb gold and 16 ppm silver. A second grab sample (04-BPR-02) taken 15 m along strike of a chalcopyrite-rich section, assayed 5.51% copper, 182 ppm nickel, 336 ppm zinc, and no appreciable platinum, palladium or gold. A narrow, 0.5 cm wide quartz vein (UTM Zone 16, 601716E, 5441789N, NAD 27) was also observed striking 130°. The vein is hosted in mafic schist, likely an altered and metamorphosed metavolcanic rock. Schistosity was measured striking 210°. A grab sample (04-BPR-03) assayed 3.6% lead, >5000 ppm zinc, 144 ppm copper, 33 ppm nickel, and 36 ppm silver.

Several VMS targets (copper-zinc) occur in the area associated with iron formation (Faries Lake, Faries Lake South Extension, R. Gionet, Ice Cream Lake occurrences) or with metamorphosed VMS alteration (orthoamphibole-anthophyllite-garnet) (Rawluck Lake, Twist). However, the more significant occurrences recently discovered are associated with a magmatic, copper-nickel-platinum group element mineralization (Moshkinabi Lake occurrence, Moshkinabi Lake Extension, Kejimalda zone, Preston, Gionet Cu-Ni, and Ice Cream Lake road). Some occurrences such as the Faries Lake South Extension and R. Gionet appear to represent a magmatic copper-nickel-platinum group element overprint or remobilization. Higher platinum group metal values are associated with nickel-rich rocks (pyrrhotite and pentlandite) rather than with chalcopyrite. In the past decade numerous copper-nickel-platinum group element occurrences have been discovered by Beep Mat prospecting in the Faries Lake–Moshkinabi Lake intrusive complex. The copper-nickel-platinum group element-rich intrusive complex requires both regional and detailed mapping, as well as traditional and Beep Mat prospecting, soil geochemical surveys, deep penetrating airborne (MEGTEM or V-TEM) electromagnetic and magnetic surveys, ground magnetometer and electromagnetic surveys, and follow-up diamond drilling. Further exploration in the area is warranted.

Sande–Stewart Occurrence

The Sande–Stewart occurrence is located near the east end of Lynxhead Bay on Marmion Lake, approximately 23 km northeast of the town of Atikokan. A gold mineralized breccia zone was discovered in 1986 by prospectors D. Sande and E. Stewart, and is described by Patterson et al. (1987) and Lavigne et al. (1990).

The property is underlain by the Marmion Lake Batholith; lithologies include tonalite, granodiorite, diorite, gneiss, mafic metavolcanic xenoliths and mafic dikes (Fenwick 1976). Several previously discovered, and new mineral occurrences, were investigated by the senior author in 2004. Lavigne et al. (1990) described a North and South Deformation zone. The North Deformation zone strikes 080 to 085° and dips moderately toward the south. The South Deformation zone suggests a strike between 110 and 120°, and dip between 55 and 60° south. At Location 1, approximately 100 m southeast of the camp (UTM Zone 15, 614684E, 5420616N, NAD 27), a narrow, 5 cm wide quartz vein and stockwork hosted by green, saussuritized, chloritic tonalite assayed 1.42 ounce per ton gold (04-BSS-01). Previous assays up to 2.44 ounce per ton gold are reported and Butte Resources Ltd. (1988) drilled several holes in the area (Lavigne et al. 1990). Minor gossan and pyrite were noted in the quartz vein. Other quartz veins striking 326° were crosscut by cross structures striking 64°. Numerous narrow quartz veins and quartz stockwork containing minor pyrite were also observed, hosted by sheared and saussuritized tonalite.

The Twin Pine occurrence is located approximately 200 m southeast of the cabins (UTM Zone 15, 614927E, 5420521N, NAD 27). A prominent cross structure striking 340° (160°) was observed in medium to coarse-grained tonalite. The tonalite displayed alteration including apple green saussuritization, sulphidization (pyrite), and hematite. Past channel sampling by Butte Resources Ltd. indicated 0.26 ounce per ton gold over 12.1 feet. A 1 m chip sample collected by the author assayed 0.02 ounce per ton gold (04-BSS-02).

At the Ted's Trench location (UTM Zone 15, 614982E, 5420555N, NAD 27), foliated tonalite, in contact with a mafic dike, was observed. Ductile deformation striking from 100 to 130° was present with the mafic dike-pegmatitic tonalite contact striking 130°. Mineralization and sulphides strike 100°, and numerous quartz stringers and stockwork systems strike 108°. Past channel sampling assayed 1.04 ounce per ton gold over 8.2 feet (Butte Resources Limited, 1988, Resident Geologist Files, Thunder Bay South District). A chip sample collected by the author across 1 m of altered and foliated tonalite (Sample 04-BSS-03) assayed 0.07 ounce per ton gold. Sample 04-BSS-04 was collected at the V-Trench area (UTM Zone 15, 615001E, 5420560 NAD 27). The sample collected by the author of altered tonalite and chloritic mafic dike with minor pyrite assayed 0.02 ounce per ton gold. Historic channel sampling assayed 0.13 ounce per ton gold over 8.2 feet (Butte 1988).

The Sande–Stewart breccia occurrence (UTM Zone 15, 614728E, 5420695N, NAD 27) has been described by Patterson et al. (1987): "The breccia zone consists of angular fragments of trondhjemite mineralized with fine- to coarse-grained pyrite, in a sericite-chlorite-pyrite matrix. The zone strikes 110 to 120° and dips 55 to 60° south. It has been traced for over 120 m along strike with widths ranging from 5 to 10 m." Channel sampling indicated assays of up to 0.19 ounce per ton gold over 60 feet and diamond drilling intersected 0.47 across 8.1 feet (Butte 1988) including 1.6 m of 0.70 ounce per ton gold (Lavigne et al. 1990). A 30 by 30 m zone of altered, hematized, carbonatized, saussuritized, tonalite breccia was observed, which included irregular rusty, pyrite-rich zones. Cut and polished samples display angular fragments of hematized and saussuritized (epidote and chlorite-rich) tonalite in a quartz stockwork. Individual quartz veins up to 2 cm in width were observed in this brittley deformed area. The rock displays a red-green coloration and can host up to 1 to 2% disseminated pyrite. Euhedral pyrite grains up to 5 mm, and sulphide zones striking 80° and 110°, were observed. A grab sample (04-BSS-05) collected by the author assayed 0.22 ounce per ton gold.

Approximately 100 m northwest of the camp, the Creek zone (UTM Zone 15, 614642E, 5420802N, NAD 27) is located. A major lineament strikes 60° and dips 60° S. Cross structures were observed striking 20° and 340°, including chlorite seams. A left-lateral, or sinistral, sense of displacement was observed. Previous assays of 2.6 ounces per ton gold over 0.7 m were observed and Hole 08 intersected 0.05 ounce per ton gold across 2.5 m (Lavigne et. al. 1990). A grab sample (04-BSS-06) of narrow quartz veins with pyrite in carbonatized, altered tonalite located along the ravine in the creek, assayed 0.11 ounce per ton gold.

Stripping by D. Sande and T. Stewart in 2004 to the northeast of the Sande–Stewart occurrence discovered the Trap Area 2 occurrence (UTM Zone 15, 615061E, 5421331N, NAD 27). A brittle shear zone up to 1.5 m wide has been exposed by stripping for 30 m. Foliated tonalite strikes 330°, and contains fine pyrite and quartz stringers. The area is intruded by a mafic dike, and pink potassic-rich areas and recrystallized quartz are present. Altered white tonalite becomes foliated and contains euhedral pyrite (up to 1 by 0.5 cm). Hematitic and potassic alteration is present and brittle deformation is evident. A grab sample (04-BSS-07) from the main zone assayed nil; however, a chip sample (04-BSS-08) across 1 m assayed 0.02 ounce per ton gold. Assays as high as 0.06 ounce per ton gold have been reported (E. Stewart, Prospector, personal communication, 2004). Several hundred metres south of Area 2, Area 1 was stripped and sampled in 2001 and 2002. Once again structures striking 40°, and cross structures 110° were observed. A sinistral sense of displacement was observed. Assays of up to 0.09 ounce per ton gold have been reported (E. Sande, Prospector, personal communication, 2004). Further stripping and sampling in these areas are warranted.

The Hammond Reef property lies immediately west of the Sande–Stewart property, and hosts a historic resource of 85 500 000 t at a grade of 0.93 g/t gold (Third Quarter Report, Pentland Firth Ventures Ltd., 1997). (Note: The resource estimate listed does not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101, and are historic resource figures generated by past workers). The Sande–Stewart area appears to represent a brittle-ductile multiphase, sinistral deformation regime (Lavigne et al. 1990) between two major northeast-trending faults or shear zones. The Sande–Stewart breccia occurrence represents a brittle "crush zone" along a southeast trending (110°), cross structure or lineament, possibly at the intersection of several structures. Faults, shears and lineations striking 0°, 20°, 30°, 70°, 90°, 100°, 110°, 130°, and 150° were all observed, suggesting a complex conjugate set of brittle-ductile shears and fault zones. Prospecting, stripping, sampling, soil geochemical surveys, induced polarization geophysical surveys, and diamond drilling are recommended. Gold mineralization appears to be associated with pyrite mineralization, hematitic alteration and saussuritation. No drilling south of the Sande–Stewart breccia zone has been conducted yet numerous economic gold values are present. Further exploration and drilling is warranted.

RECOMMENDATIONS FOR EXPLORATION

The Big Duck Lake Porphyry (Schreiber Area)

The Big Duck Lake porphyry lies 25 km north of Schreiber within the Wawa Subprovince. More than 40 individual gold occurrences have been identified on the property, including the Coco–Estelle zone with a historical drill-indicated reserve of 53 700 tonnes grading 10.7 g/t gold (Lewis 1993) (Note: The resource estimates does not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101, and are historic resource figures generated by past workers). Quartz-feldspar porphyry intrudes mafic metavolcanic rocks. The sill-like porphyry bodies trend easterly and dip steeply 65 to 70° N, and are considered to have formed late in the tectonic history. Felsic fragmental units are found on the contacts of the porphyry bodies and may have developed through *in situ* tectonic brecciation (Ritcey 1992) or represent an intrusive-extrusive, synvolcanic sublayer intrusive (Patterson et al. 1984).

Gold mineralization with subsidiary silver, zinc, lead, copper and molybdenum is associated with 1) quartz veins; 2) carbonate veins; 3) sulphide veins; 4) magnetite pyrite veins; 5) sheared zones with disseminated pyrite; and 6) exhalative zones (Ritcey 1992). Alteration includes potassic (muscovite, biotite), quartz, albite, chlorite, hornblende, carbonate and tourmaline. Pervasive sericitic, biotitic and pyritic alteration resembles some Hemlo-style mineralization and Ritcey (1992) describes disseminated pyrite with green mica in silicified, sheared and biotite-rich zones hosted by felsic intrusions or porphyry. In addition, both barite and molybdenite have been identified on several properties in the Big Buck area, including the Estelle property where 0.38% molybdenum was intersected by diamond drilling in sheared quartz porphyry and quartz veins (StratMat Ltd. Drill Logs, Assessment Files, MNDM, Thunder Bay). Drilling by KRNO Mines Ltd., under Big Duck Lake, intersected traces of fluorite and barite (StratMat Ltd. Drill Logs, Assessment Files, Thunder Bay South District). Tri-Alpha Investments Ltd. conducted stripping, trenching, sampling and induced polarization geophysical surveys in 2004, and diamond drilling is planned for 2005. More than a dozen new gold zones have been discovered and channel sampling included assay results of 29.3 g/t gold over 1.5 m and 4.9 g/t over 2 m (press release, December 11, 2003).

The Big Duck Lake porphyry complex was first considered as a possible Hemlo analogy by Schnieders and Smyk (1990). Field investigations and property visits with Battle Mountain Canada in 1996 and 1997 led to comparisons of the Big Duck Lake porphyry system and Hemlo (DeGagne 1997). Past workers such as Hopkins (1922), Bartley (1942), and Pye (1964) have all suggested that it is "possible that the mineral deposits are genetically associated to the quartz porphyry". It appears that the Big Duck Lake porphyry system is genetically associated with gold mineralization, and whole rock analyses and trace element geochemistry support both a base metal overprint (sodium depletion, copper, zinc, lead enrichment) and/or remobilization, as well as a magmatic-epithermal overprint (copper, molybdenum, vanadium, possible barite, fluorite enrichment (*see* "Property Examinations" (Big Duck Lake Property) in this report). The metamorphic grade and strain intensity might suggest a shallower depth of emplacement for Big Duck Lake compared to Hemlo. The Hemlo deposit has been recently described as a metamorphosed, deformed, shear-zone hosted, structurally controlled, mesothermal deposit (deep, hydrothermal deposit) rather than resembling that of a porphyry deposit (Muir 1997). However, Johnston (1996) suggests the Hemlo deposit represents an overprint or possible end-member of an intrusion-related deposit, associated with magmatic hydrothermal alteration and hydrothermal breccias. Johnston (1996) further suggests that the mechanism of ore deposition at Hemlo is comparable to that of porphyry-style deposits. While the origin of the Hemlo deposit has been an enigma for the past two decades, and will continue to be so into the future, the Big Duck Lake area represents gold mineralization and alteration with similarities to that at Hemlo (*see* "Property Examinations" (Big Duck Lake Property) in this report). Further exploration of these and any high-level, quartz ± feldspar porphyritic rocks is warranted. Exploration programs should consider using traditional prospecting, stripping, sampling, photo-lineament studies, induced polarization, electromagnetic and magnetometer geophysical surveys, radiometric surveys, lithogeochemical analyses for alteration and pathfinder elements, and diamond drilling.

Uranium in the Thunder Bay Area

Exploration for uranium in the Thunder Bay area has been cyclical in nature with periods of activity between 1947 to 1949, 1954 to 1958, 1968 to 1970, and 1976 to 1983. A fifth period of exploration commenced in 2004 with the interest shown by New Shoshoni Ventures Ltd. and Rampart Ventures Ltd. in the uranium potential of the Thunder Bay region with the acquisition of mining claims in the Black Sturgeon Lake and the Wolfpup Lake areas, northeast of the City of Thunder Bay.

Scott (1987) describes some of the uranium occurrences in the Nipigon Basin area. The geology of the Nipigon Basin has been described by many workers including Cheadle (1981), Coates (1972), Hawley (1929), Franklin (1970, 1978), Franklin and Mitchell (1977), Franklin et al. (1982), Franklin et al. (1980), McIlwaine (1971a, 1971b), McIlwaine and Tihor (1975a, 1975b), Tanton (1931), Wilson (1910), Tihor (1973), Card et al. (1972), Sutcliffe (1982), and Sutcliffe and Greenwood (1982). More recent work includes the mapping and geophysical surveys conducted by members of the Lake Nipigon Region Geoscience Initiative. This includes geological mapping by MacDonald (2004), Hart (2000), and Hart and Magyarosi (2004).

With the recognition of the unconformity-related uranium deposit type in Australia and in Northern Saskatchewan, other Proterozoic Basins were investigated for uranium. One of these was the Sibley Basin where many of the conditions conducive to the development of unconformity-related uranium deposits exist. The reader is referred to Scott (1987) where comparisons between the Athabasca Basin in Northern Saskatchewan and Sibley Basin in the Thunder Bay area are made.

Scott (1987) describes:

> Four major categories of uranium occurrences have been identified in the Sibley Basin and underlying area:
>
> 1. Uranium associated with the rocks of the Quetico Subprovince (white albite-quartz-muscovite pegmatites);
> 2. Uranium associated with the Proterozoic/Archean unconformity;
> 3. Uranium associated with alkalic and carbonatite rocks of Late Precambrian age;
> 4. Uranium occurrences associated with the Gunflint Formation "Mudball tuff" (Scott 1987) and radioactive nodules in the Sibley Group (Tanton 1948).

The presence of a fifth type of deposit, the IOCG-type (Olympic Dam model), should not be overlooked in the Sibley Basin area.

The following criteria have to be considered when uranium exploration targets are being chosen:

1. Uranium source area
2. Means of releasing any available uranium
3. Uranium transport mechanism
4. Deposition of uranium in structural and/or geochemical traps
5. Preservation of the deposit

In the Thunder Bay area the most probable source rocks for uranium are the granitoid rocks and metasedimentary gneisses of the Quetico Belt. This is borne out by the Geological Survey of Canada, Open Files 745 and 746 that depict the regional lake bottom geochemistry of an area from Fort Frances to Sault Ste. Marie at a scale of 1:2 000 000. The Quetico Belt signature is one of anomalously high uranium background that spans an area of 490 km long by 80 km wide. Many hotspots within that area contain over 100 ppm uranium in lake bottom sediments.

Weathering of a pre-existing terrain mechanically released uranium into sedimentary basins, which when lithified and then metamorphosed, became the migmatites and granitoids of the Quetico Belt. Partial remelting concentrated uranium in pegmatites and similar granitoids. Prior to the deposition of the Animikie Group and the Sibley Group, there was an extensive period of weathering that liberated more uranium in weathered rock products.

Uranium is released from source rock areas by either mechanical or chemical means. This is accomplished by the intense weathering of source areas coupled with mechanical transport, and later, as the atmosphere became more oxygen-rich, uranium could be dissolved and transported in solution. The mechanical disaggregation of source rocks results in the transportation of the radioactive minerals by moving water, with deposition in suitable areas of a drainage regime. Mechanical transport took place in an oxygen-depleted environment during the Paleoproterozoic, and as the atmosphere became more aerobic, chemical transport of uranium in solution prevailed.

At least three periods of intense weathering and regolith development are evident in the geological record of the Sibley Basin: 1) a Neoarchean episode that took place prior to the deposition of the rocks of the Animikie Group and is manifested by weathered Archean granitoids and volcanic rocks that underlie the Animikie and Sibley Groups; 2) a pre-Mesoproterozoic episode that took place prior to the deposition of the Sibley Group and is evident in the weathered English Bay Porphyry (1536 Ma, R.H. Sutcliffe, OGS, personal communication, 1982) that is overlain by Sibley Group conglomerate and sandstone and also the oxidized nature of the Rove Formation shales as exposed at Pass Lake; and 3) the formation of a 2 m thick lateritic soil profile southeast of Leckie Lake on Late Precambrian diabase, gabbro and peridotites that intrude Sibley Group rocks.

Intensely weathered and hematized Archean granitic rock debris can be found in an overburden trench (342842E, 5564536N; UTM Zone 16 NAD 27) located north of Pillar Lake. This debris is radioactive and resembles regolith material.

The presence of a regolith is an important criteria for the development of unconformity related uranium deposits in the Athabasca area as well as in Australia (Dahlkamp and Adams 1981; MacDonald 1980; Ojakangas 1978; Tremblay 1983). Almost every major uranium deposit in the Athabasca Basin is best developed in the regolithic zone situated at the base of the Athabasca Formation. The regolith development liberated uranium from the source rocks; this weathered zone then acted as a conduit to transport the uranium in solution to its deposition sites at structural and geochemical traps. Altered and weathered basement is probably more extensive than initially realized. Gill (1926) and Moorhouse (1960) are of the opinion that a paleosol was developed on the pre-Sibley surface, but because of the trangressive nature of the Animikie and Sibley basins, any existing regolith would have been removed or reworked by the advancing beach line. The regolith, however, would have been preserved in areas of rapid infilling, such as valleys and grabens. Thus both a structural and perhaps a geochemical trap would be present. Sibley Group stromatolites at Kama Bay emit a strong H_2S smell when struck with a hammer.

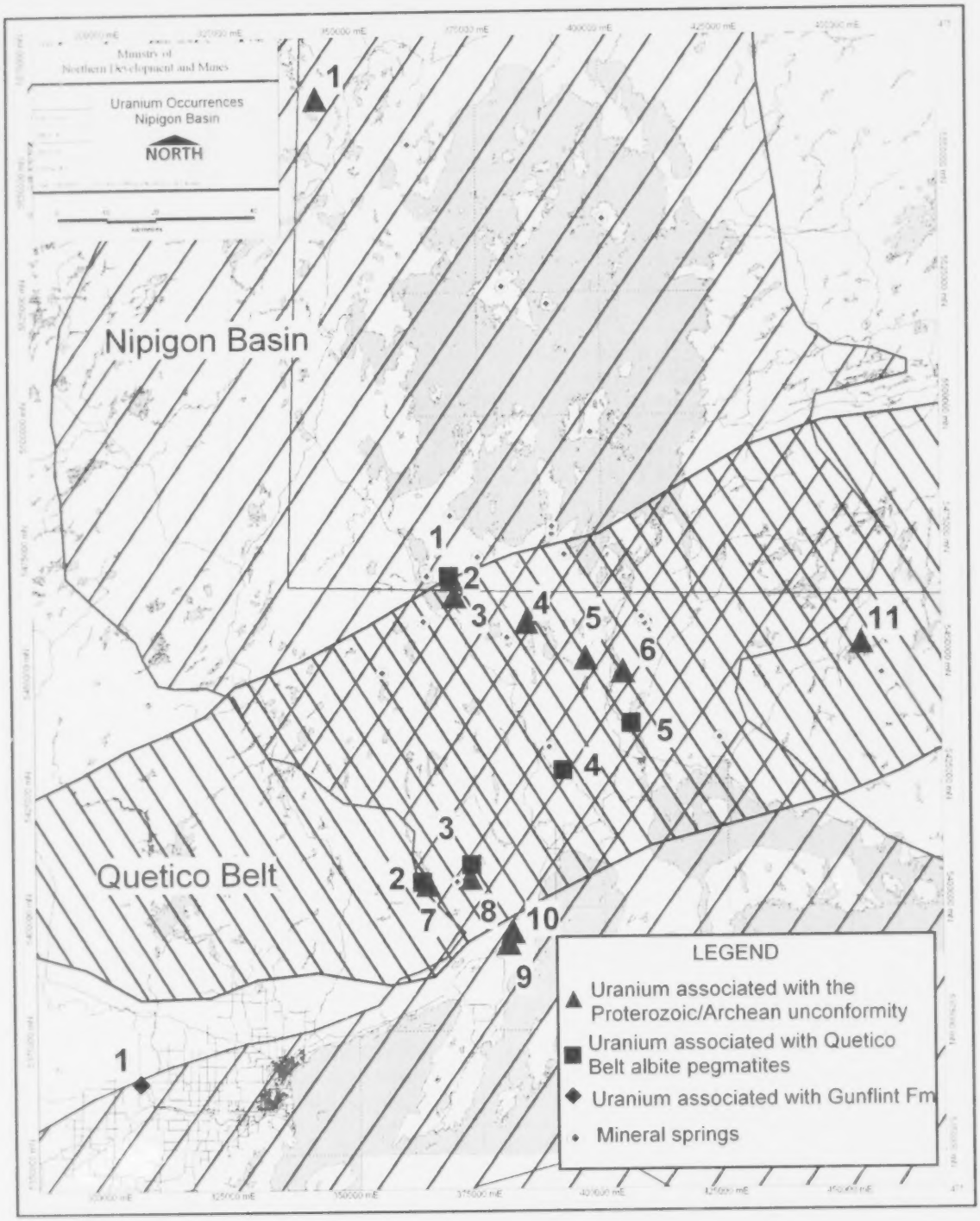

Figure 3. Uranium occurrences in the Nipigon Basin (numbered sites are described in the table below).

The most prospective areas for unconformity-related uranium deposits in the Thunder Bay–Nipigon region would be where the Quetico Subprovince source rocks underlie the rocks and structures of the Sibley Basin. The reader is referred to Scott (1987). In addition, the plumbing system that produced all the silver, lead and zinc deposits in the Thunder Bay–Nipigon area is still active. There still are fluids percolating through the stratigraphy and this is confirmed by the numerous salt springs or mineral licks that seem to be present in the Nipigon Basin. These should be sampled and documented as part of an ongoing geochemical assessment of the basin. The known salt springs as well as the known uranium occurrences in the Nipigon Basin are depicted on Figure 3. The occurrences are briefly described in the table that follows.

The area underlain by the Gunflint Formation southwest of the City of Thunder Bay should be explored for uranium. The presence of a regolith (Gill 1926; Harcourt 1938; Campling 1973); the presence of uraniferous source rocks (Darnley et al. 1970 Fenwick and Scott (1977); the presence of regional block faulting and active plumbing system (Franklin 1970); and possible geochemical traps and therefore uranium deposition areas in the form of carboniferous units (anthraxolite, algal and stromatolitic beds probably emitting H_2S) all tend to increase the uranium potential of the Gunflint Formation southwest of the City of Thunder Bay.

The possibility of Olympic Dam style of mineralization occurring within the Nipigon Basin and elsewhere in Northwestern Ontario should not be overlooked. Quartz-hematite breccias with uranium values occur at Good Morning Lakes area (Yule 1979); intense hematization occurs in the eastern section of the Garden Lake volcanic belt (Hart 2000); large areas of hematized Archean granitoids occur in the Pillar Lake area south west of Armstrong; extensive areas of quartz-hematite breccias in granitic rocks occur in the Frazer Lake–Black Sturgeon Lake area (Coleman 1909; Scott 1987); and the recently released Fort Hope Lake bottom geochemical survey (Ontario Geological Survey 2001) where coincident copper-uranium anomalies are proximal to an iron occurrence in granitic rocks (Thurston et al. 1972).

Ruzicka (1996) has summarized the geological setting, age, structural features, alteration and mineralogy of unconformity-related uranium deposits. Genetic models are discussed and exploration guidelines given. The reader is referred to Ruzicka (1996) for more details.

Exploration programs for uranium should utilize OGS lake bottom and till sampling surveys, as well as airborne magnetometer, electromagnetic and radiometric surveys. Deeper penetrating geophysical surveys such as MEGATEM2 and V-TEM (Dream Catcher) could also be used to define graphite, unconformity-related uranium anomalies. Ground follow-up including radiometric surveys, prospecting, soil sampling, stripping and diamond drilling are recommended.

▲ URANIUM ASSOCIATED WITH FAULTS AT THE PROTEROZOIC-ARCHEAN UNCONFORMITY:

Occurrence (UTM Zone 16, NAD 27) Numbers keyed to Figure 3.	**Description**
1. Pillar Lake (342842E, 5564536N)	Radioactive hematized Archean rocks and boulders in an overburden trench that resemble regolith. Raw prospect. No assays yet.
2. Split Rapids Dam (369700E, 5466800N)	Pitchblende-bearing hematized veins in faults crosscutting metamorphosed Archean banded iron formation containing 2 to 3% pyrite. Highly radioactive vein sets; best assay was 3.9% U (Scott 1987). Good description by Thompson (1984).
3. Black Sturgeon Lake (369900E, 5463300N)	Hematite-cemented fault breccias. Clasts consist of Archean volcanic and granitic rocks, quartz and chalcedony. Granitic clasts exhibit intense alteration. U: 800 ppm; Ni: 100 ppm; Co: 60 ppm (Scott 1987). One of the hematite occurrences described by Coleman (1909).
4. Roland Lake (384440E, 5458040N)	Located south of Roland Lake on Church Road. Hematized fault breccia in granitic rocks. U: 16.2 ppm; Th: 42.4 ppm. Zone is radioactive. One of the hematite occurrences described by Coleman (1909).
5. Malbourne Lake (396500E, 5450400N)	Highly radioactive hematite-pitchblende vein with secondary uranium minerals. Narrow vein, no assays.

6.	Jessie Lake (404000E, 5447800N)	Hematized fault or shear zone in Archean granitic and migmatite rocks. Maximum width is 0.76 m and traceable for 224 m. Hematitic alteration envelope extends up to 0.70 m on either side of the radioactive zone. Xenoliths of Gunflint oolitic iron formation present. Up to 420 ppm U and 290 ppm Th in grab samples (Scott 1987).
7.	Greenwich Lake (Christianson) (363920E, 5404820N)	Pyrite-cemented fault breccia with Sibley Group fragments. Breccia zone assayed 1.1% U; a hematized breccia float assayed 2.48% U. Pan Canadian Development Company Ltd. outlined two "ore shoots": one is 5.9 feet by 150 feet averaging 0.15% U_3O_8; the other 5.0 feet averaging 0.29% U_3O_8. Breccia zone that contains the vein is 3.0 m wide (Assessment Files, Thunder Bay South District).
8.	Good Morning Lake Fault (372744E, 5406234N)	Quartz-hematite breccia zone in the Good Morning Lake fault system. Width exceeds 50 m. Best grab sample assay: 0.57% U_3O_8 (Scott 1987).
9.	Enterprise Mine (380400E, 5392780N)	Old lead-copper-silver mine with uranium values up to 0.06% U_3O_8. Also 27.9% Pb and 6.16% Cu (Scott 1987).
10.	Dorion Amethyst Mine (381340E, 5395090N)	Copper-uranium mineralization in brecciated Sibley Group red mudstone near the Proterozoic Archean unconformity. Grab sample assays: 160 ppm U; 8.16% Cu (Scott 1987).
11.	Kabamitchigama Lake (452100E, 5453400N)	Weakly radioactive zones associated with fault breccia and amethyst veins. Copper present.

■ URANIUM ASSOCIATED WITH QUETICO BELT PEGMATITIC ROCKS:

Occurrence (UTM Zone 16, NAD 27) Numbers keyed to Figure 3.		**Description**
1.	Black Sturgeon Lake (369900E, 5463300N)	Hematized myrmekitic pegmatite with brannerite and thorite (Thompson 1984; Scott 1987).
2.	Greenwich Lake (363920E, 5404820N)	Albite pegmatite dikes containing uraninite and uranophane and other secondary yellow uranium minerals. Best grab sample yielded 0.12% U_3O_8 (Resident Geologist's Files, Thunder Bay South District).
3.	Innes Lake (373300E, 5408800N)	Medium- to coarse-grained albite pegmatites with secondary uranium minerals (uranophane?) on fracture surfaces. Grab samples up to 0.18% U_3O_8 (Scott 1987).
4.	Tessier–Williamson (391700E, 5428200N)	Migmatic and pegmatitic Quetico rocks with uranophane (?) on fracture and weathered surfaces. Grab sample assays: 680 ppm U and 20 ppm Th (Scott 1987). Pye (1955) reports 0.096% U_3O_8 from a grab sample.
5.	Lake Helen (405930E, 5438090N)	Quetico migmatites and gneissic rocks intruded by white albite pegmatite dikes up to 30 m wide. Yellow uranophane (?) stain present on some pegmatites. Values of up to 0.135% report by Aggressive Mining Ltd. in 1967 (Assessment Files, Thunder Bay South District).

♦ OTHER OCCURRENCE TYPES:

Occurrence (UTM Zone 16, NAD 27) Number keyed to Figure 3.		**Description**
1.	Gunflint Formation "Mudball Tuff" (305450E, 5364460N)	Accretionary lapilli tuff beds ("mudball tuff") are exposed at the hydroelectric plant overflow and beneath the Highway 11-17 bridge at Kakabeka Falls. This unit is detectable with a scintillometer and is weakly to moderately radioactive. Grab sample yielded 0.004% U_3O_8 (Scott 1987). It might be a good source rock for potential deposits in the Gunflint Formation.

Base Metal Potential of the Shebandowan Greenstone Belt

The potential for VMS base metal deposits in the Shebandowan greenstone belt has been elevated due to recent discoveries (Figure 4). These include the discovery of large boulders of VMS style mineralization in the Aldina Township area and the subsequent discovery of high grade sphalerite in place by RJK Exploration Ltd. and GLR Resources Inc. in May 2001 (*see* Figure 4, Location 1, Shebandowan Belt) (Schnieders et al. 2001; Schnieders et al. 2002). A previously undefined felsic volcanic horizon defines a stratigraphic host for base metal mineralization. This horizon has been exposed by stripping in the Aldina Township area. It was previously intersected in diamond drilling by New Fortune Mines in 1956 during their exploration for iron in the Aldina area (Assessment Files, Thunder Bay South District).

With some assumptions related to the deformation of the Shebandowan belt and a little bit of geological thought, this felsic horizon can be traced throughout the belt ending at the bay of Thunder Bay to the east. Macdonald (1941), Moorhouse (1960), Kustra (1972), and Scott (1990) have collectively delineated this belt from the vicinity of Ware Township in the west to Mary Harbour on Thunder Bay, Lake Superior, in the east. A major disruption of the continuity of this felsic package occurs in the vicinity of Horne, Adrian, Conmee and Aldina Township areas. Further detailed mapping may discover additional felsic horizons. This coincides with an area of major deformation as indicated by the magnetic signature as depicted in the Shebandowan airborne survey (OGS 2003).

Bajc (1999) discovered a large sulphide boulder in a gravel pit in Conmee Township (Location 2). Subsequent assays of parts of this boulder by staff of the Regional Resident Geologist Program yielded up to 5.13% zinc with anomalous values in gold. One possible source area for this boulder lies to the northeast of the gravel pit in the vicinity of Mokomon, where in 1917, the Nichols Chemical Company conducted extensive trenching and drilling in the search for pyrite. Pyrite lenses have been mapped to be at least 27 feet wide (Assessment Files, Thunder Bay South District) (Location 3). One sample collected by staff of the Regional Resident Geologist Program yielded 0.06 ounce per ton gold. At Location 4, 2.3 km to the northeast from Location 3, two north trending trenches plus a small blast pit have exposed brecciated oxide and sulphide facies iron formation. Sampling reported by Brown (1995) yielded up to153 ppb gold, although no assays for base metals were undertaken. At Location 5, on Highway 102 at Mud Lake, a VMS-style sulphide zone is exposed on the north side of the highway in fragmental felsic volcanic rocks. Grab samples from this site returned assays of up to 0.85% zinc and 0.25% copper. Further to the east and still within the felsic volcanic belt at Location 6, samples taken from fragmental volcanic rocks in Gorham Township in the bed of the Current River, yielded assay results of up to 1.12% zinc, 0.27% copper, and 0.81 ounce per ton gold (District Geologist Files, Thunder Bay South District). Untested VLF airborne conductors in MacGregor Township associated with this felsic package at Location 7 should be further explored for VMS-style sulphide mineralization (Assessment Files, Thunder Bay South District).

This entire felsic volcanic package should be explored for base metal mineralization, especially in areas adjacent to known showings. The Mokomon area should receive special attention because of the presence of known sulphide mineralization that happens to be up ice from a large sphalerite-rich boulder found by Bajc (1999).

Diamond Potential in the Hemlo Greenstone Belt

Diamond-bearing rocks in the Michipicoten (Wawa) greenstone belt have been described by Wilson (2004), Lefebvre et al. (2003), Morissette and Francis (2004), Vallancourt et al. (2003, 2004) and others. Several mafic intrusions noted previously in the Hemlo greenstone belt display characteristics similar to these rocks. The intrusions were noted along Lake Superior near Heron Bay, in the immediate vicinity of the Hemlo gold deposit, and to the east and north of the greenstone belt.

The intrusions, observed as dikes near Heron Bay, have been termed "schistose diatreme gabbroic dikes", and strike subconcordantly to stratigraphic units, and dip much less steeply (Muir 1982: *see* description for Unit 5d, Photo 11). The dikes are biotite lamprophyres and are noted to contain distinct subrounded to tabular xenoliths consisting of mafic and ultramafic rocks as well as felsic metavolcanic and intrusive rocks. Considerable variation occurs in xenolith composition, shape and abundance both along strike and from dike to dike.

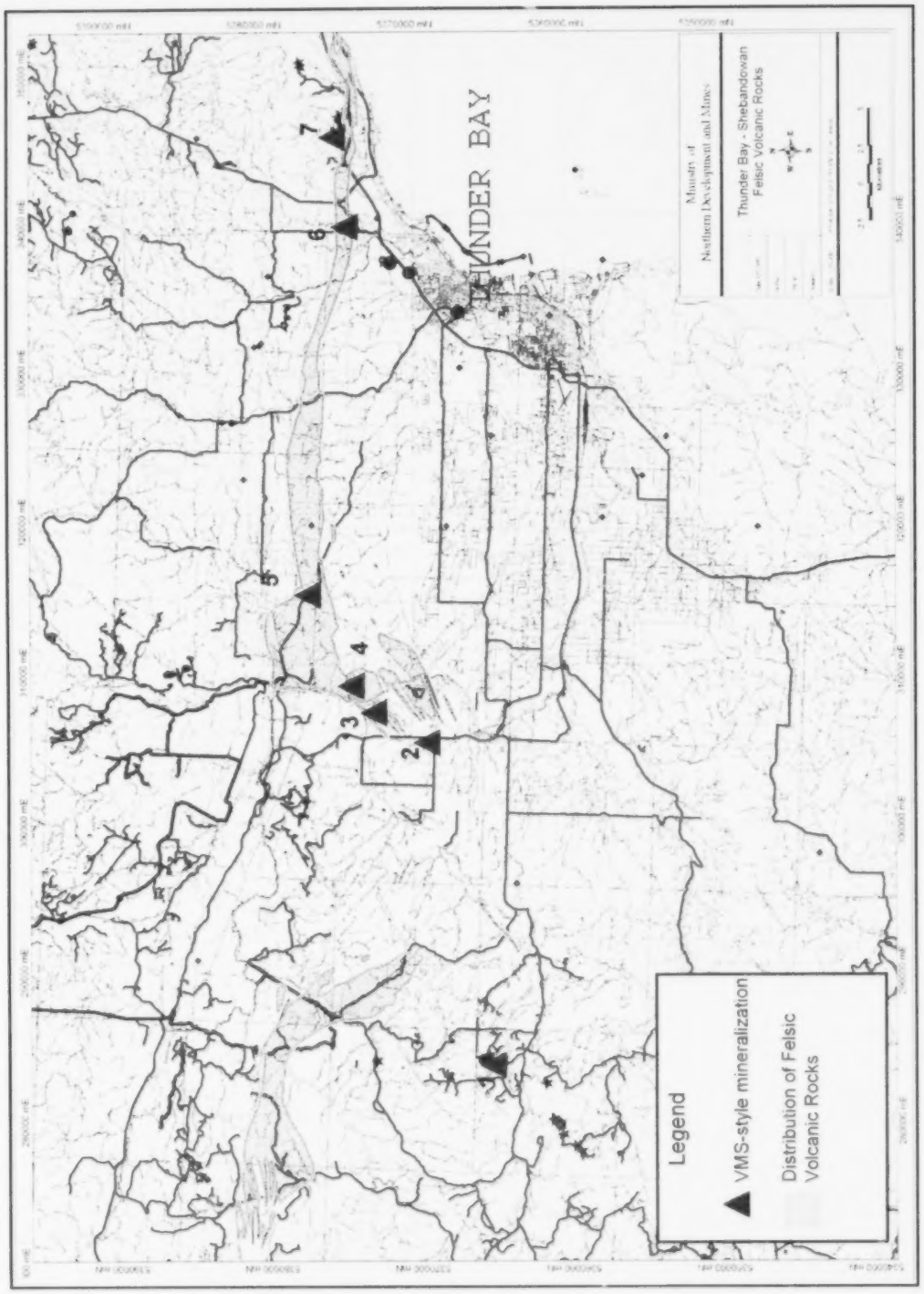

Figure 4. Felsic volcanics in the eastern Shebandowan greenstone belt. (Numbered sites are keyed to text.)

The intrusions near the Hemlo gold deposit, particularly the North, South, and C zones, have been termed "biotite lamprophyre with mafic/ultramafic xenoliths ± feldspar phenocrysts" (Muir 1997: *see* description of Unit 12a; Figures 23, 24, 39, 43; Plates 4a and 4b). Intrusions range from tabular (dikes) to irregularly shaped bodies. The latter are spatially associated with intrusion breccias (country rock xenoliths in a mafic igneous matrix) and brecciated country rocks (no igneous matrix) and share characteristics of some diatremes. Xenoliths include exotic mafic and ultramafic rocks, and locally derived sedimentary and volcanic rocks. Considerable variation in the composition, shape and abundance of xenoliths, occurs within and among, different intrusions. Some intrusions appear to be composite, that is with more than one phase. Some "phases" and discrete intrusions contain few, if any, xenoliths and are less mafic in composition. Locally, some of the lamprophyre intrusions are spatially associated with earlier intrusions that have a mafic to felsic "net-veined" character. These latter intrusions also appear similar to bodies within the Michipicoten greenstone belt.

Examination of highway exposures within several kilometres of the Hemlo greenstone belt boundary, locally along Highway 17 toward White River, and Highway 614 toward Manitouwadge, reveal intrusions with a visual affinity to some of the above-described bodies. However, in these cases the intrusions contain country rock xenoliths, consisting in part of granitoid and gneissic rocks. The overall distribution of these intrusions underscores the point that they are not limited to the greenstone belt.

These lamprophyre/diatreme intrusions in the Hemlo greenstone belt have not been tested for diamonds, but in light of the similarities to intrusions in the Michipicoten greenstone belt, analyses could prove fruitful.

OGS ACTIVITIES AND RESEARCH BY OTHERS

1. Denver Stone, Precambrian Geoscience Section, OGS, completed two maps of the Lac des Mille Lacs area, which are due to be published in March 2005 (Stone 2005a, 2005b). This area includes the north margin of the Quetico Subprovince, and the adjacent Lac des Mille Lacs greenstone belt, in the Marmion terrane of the central Wabigoon Subprovince. The Lac des Mille Lacs greenstone belt is composed of extrusive and intrusive mafic igneous rocks, intermediate to felsic fragmental volcanic rocks, and rare sedimentary units. The geology of the Lac des Mille Lacs area includes six suites of plutonic rocks ranging from tonalite and granite to gabbro and peridotite, Quetico metasediments that are composed of thin- to thick-bedded wacke and siltstone, conglomerate, and iron formation interpreted on the basis of aeromagnetic maps (Stone 2004; OGS 1980a, 1980b).

2. The Lake Nipigon Region Geoscience Initiative (LNRGI) is a two-year $3.5 million geoscience project managed by the Ontario Prospectors Association. The project area is approximately 22 000 km^2 covering the region around western Lake Nipigon. Projects associated with the Lake Nipigon Region Geoscience Initiative (LNRGI) were initiated in 2003 and continued in 2004 (Rayner et al. 2003; Rayner 2004). They include:

    - Geological mapping in the southern (Tom Hart, Precambrian Geoscience Section, OGS) and west-central (Carole Anne MacDonald, Precambrian Geoscience Section, OGS) areas of the Nipigon Embayment, respectively (Hart and Whaley 2004; MacDonald et al. 2004)
    - A petrology project, initiated in 2004, to complement OGS bedrock mapping
    - Aeromagnetic and gamma ray spectrometry survey over a large area west of Lake Nipigon, completed in 2003
    - Ground-based gravity survey conducted west and south of Lake Nipigon, completed and released in 2004
    - Audio magneto-telluric surveys by J. Craven, Geological Survey of Canada, in 2004 to provide deep crustal profiles across the western edge of the Nipigon Embayment
    - Paleomagnetic study of mafic dike swarms by R. Ernst, Geological Survey of Canada, to provide insight into magmatism in the Nipigon Embayment
    - Geochronologic sampling and analysis of key stratigraphic units by Larry Heaman (University of Alberta)
    - Surficial geochemical and Quaternary case studies of five key areas as follow-up to nickel and platinum group element anomalies generated by earlier Operation Treasure Hunt lake sediment surveys (Dyer 2004; Barnett 2004; Dyer and Barnett 2003)

Lakehead University Research

- Sulphide saturation mechanisms in diabasic and gabbroic intrusions in the Nipigon Embayment (Kissin 2003)
- Stratigraphy of the Sibley Group and its relationship to sedimentary units of the basal Osler Group (Metsaranta and Fralick 2004; Metsaranta et al. 2003)
- Geochemistry and mineralogy of Nipigon Diabase sills (Richardson and Hollings 2004; Richardson et al. 2003)
- Petrology and mineral chemistry of the Seagull intrusion (Heggie and Hollings 2003)
- Geographical Information System (GIS) compilation of existing geological and geophysical data, including proprietary, in-kind contributions from industry partners
- Geophysical modeling over selected areas of interest
- Diamond-drill core recovery and storage in MNDM remote drill core storage facility

The project has been completed and the final data release is scheduled for April through to June 2005.

3. Under the supervision of Keiko Hattori, PhD candidate John Hinchey (University of Ottawa) is documenting the geology of the palladium mineralization in the South Roby and Twilight zones to establish the paragenesis, and to examine the genesis of the mineralization in the main zones at the Lac des Iles Mine. The focal question remains the cause of high palladium tenor of the ore, relative to other platinum group metals, and the possible role and scale of hydrothermal activity in the concentration of palladium. The major goal of the thesis is to answer the ongoing debate of the origin of the deposit, whether it is primarily magmatic or hydrothermal.

4. Under the supervision of Keiko Hattori, MSc candidate Mike Fell (University of Ottawa) is currently studying the petrology and mineralization in the Baker zone at the Lac des Iles Mine. The major goal of the thesis is to discern the intrusive relationships and timing of events in this area. Comparisons may be made to the nearby Roby zone.

5. Adrienne Hanly of Queen's University completed a PhD thesis entitled "Diagenesis, stratigraphy, paleohydrology and lead isotope study of the Proterozoic Sibley Group".

6. P. Hollings of Lakehead University studied the English Bay Complex and Archean volcanic geochemistry.

7. Dr. Phil Fralick of Lakehead University studied Precambrian sedimentary sequences (English River–Wabigoon–Quetico–Wawa subprovinces, banded iron formation, Sibley Group).

8. M.L. Hill of Lakehead University studied the structural geology of the Paleoproterozoic Gunflint Formation, Animikie Group, as it relates to the Penokean orogen.

9. Faculty and students at Lakehead University, Thunder Bay, have recently been, or currently are, involved in a number of research projects in the Thunder Bay South District:

BSc (Hon) Theses

- Rajnovich, L. Structure and mineralization west of Burchell Lake
- Shute, A. The petrofabrics and emplacement of Ash Bay Dome, Rainy Lake

MSc Theses

- Almquist, B. Rock magnetism and archeomagnetism of late glacial sediments in northern Ontario
- Heggie, G. Geochemistry and mineralization of the Seagull Intrusion, northwestern Ontario
- Marik, M. Sandstone architecture of the Paleoproterozoic Rove and Virginia Formations, western Lake Superior region
- Metsaranta, R. Paleohydrology of the Mesoproterozoic Sibley Group
- Richardson, A. Geochemistry and petrogenesis of the Nipigon Sills

A complete listing of publications received in the Thunder Bay South District office in 2004 is included in Table 5. Properties not currently being mined in the district are listed in Table 6.

Table 5. Publications received by the Thunder Bay South Resident Geologist's Office in 2004.

Title	Author(s)	Type and Year of Publication
Lake Nipigon Embayment Area	Lake Nipigon Region Geoscience Initiative	Airborne Magnetic and Gamma-Ray Spectrometric Survey Maps 81 812 to 81 847 (1:50 000) Maps 81 848 to 81 853 (1:100 000) Geophysical Data Set 1047a-d (Ontario Geological Survey 2004)
Report of Activities 2003, Resident Geologist Program, Thunder Bay South Regional Resident Geologist Report: Thunder Bay South District	B.R. Schnieders, J.F. Scott, M.S. O'Brien, M.A. Magee and C. Komar	Open File Report 6129 (Ontario Geological Survey 2004)
Precambrian Geology of the Northern Black Sturgeon River and Disraeli Lake Area, Nipigon Embayment, Northwestern Ontario	T.R. Hart and Z. Magyarosi	Open File Report 6138 Accompanied by Maps P.3538 to P.3540 Miscellaneous Release—Data 133 (Ontario Geological Survey 2004)
Precambrian Geology of the Northern Black Sturgeon River Area, Nipigon Embayment, Northwestern Ontario	T.R. Hart and S. Préfontaine	Map P.3538 (1:50 000) (Ontario Geological Survey 2004)
Precambrian Geology of the Disraeli Lake Area, Nipigon Embayment, Northwestern Ontario	T.R. Hart and S. Préfontaine	Map P.3539 (1:50 000) (Ontario Geological Survey 2004)
Northern Black Sturgeon River Area Geological Cross-Sections, Nipigon Embayment, Northwestern Ontario	Z. Magyarosi, T.R. Hart, P. Fralick, R. Metsaranta, G.J. Heggie, P. Hollings and A. Richardson	Map P.3540 (1:50 000) (Ontario Geological Survey 2004)
Lake Nipigon Embayment Area	Lake Nipigon Region Geoscience Initiative	Ground Gravity Survey Maps 81 930 to 81 935 (1:100 000) Geophysical Data Set 1052 (Ontario Geological Survey 2004)
Precambrian Geology of the Armistice Lake Area	D. Stone, M. Fell and A. Daley	Map P.3553 (1:50 000) (Ontario Geological Survey 2004)
Lake Nipigon Region Geoscience Initiative (LNRGI) Lineament Analysis	P.J. Barnett and J. Shirota	Miscellaneous Release—Data 140 (Ontario Geological Survey 2004)

Table 6. Mineral deposits not being mined in the Thunder Bay South Resident Geologist's District in 2004.

Abbreviations

AF ..... Assessment Files
CMH ..... *Canadian Mines Handbook*
GR ..... Geological Report
MDC ..... Mineral Deposit Circular
MDIR ..... Mineral Deposit Inventory record
MLS ..... Mining Lands, Sudbury
MR ..... Mining Recorder
NM ..... *The Northern Miner*
OFR ..... Open File Report
PC ..... Personal Communication

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Anderson Lake 52A/10NE	Mo	1 346 000 T (grade not stated)	K. Fenwick optioned to El Nino Ventures Inc. (press release, February 3, 2005)	W.N. Ingham (16/06/59) in Prospectus, Lindsay Explorations Ltd. (19/06/59)	Inactive
Ardeen Mine 52B/10SE,SW	Au	90 650 T @ 15.3 g/T Au (uncut) [84 904 T @ 11.6 g/T Au, assays cut to 2 oz Au/t]; inferred resource of 1 082 939 T @ 14.4 g/T Au (uncut) [991 739 T @ 11.2 g/T Au, assays cut to 2 oz Au/t]	Pele Mountain Resources Inc. (CMH 2002-2003, p.335)	The Ontario Prospector, v.1, no.3, p.35 (1998); CMH 2002-2003, p.335	Over $2 million spent in exploration since acquisition in 1996; diamond drilling in 2003
Atikokan Iron Mine 52B/14	Fe, Cu	12 000 000 T @ 35% Fe, 0.040% Cu	K. Bjorkman (Resident Geologist's Files)	NM (26/10/72)	Inactive
Aumacho (Brink) 42E/05SW	Li	759 475 T @ 1.65% Li_2O, plus 96 000 T @ 1.5% Li_2O	A. Hayes (Resident Geologist's Files)	GR 31, p.64 (1965)	Active; VLF-EM survey conducted in 1995
Coco–Estelle 42E/03SW	Au	53 700 t @10.7 g/t	J. Bond et al. (Resident Geologist's Files)	AF	Optioned to Tri-Alpha Investments Ltd. in 2003
Coldstream 52B/10SE	Au	7.6 Mt @ 2 g/t Au	Alto Ventures Ltd. (News Release, October 1, 2002)	Alto Ventures Ltd. (News Release, October 1, 2002)	Drilled by Noranda and Freewest 1990/1991; acquired from The Other Mining Company (U.S.) Inc. in 2002
Conway 52H/08NE	Li	1.83 MT @ 0.96% Li_2O to 300 m	E.S. Conway (Resident Geologist's Files)	GR 31, p.68 (1965)	Inactive
Coubran Lake 42D/16NW,SW	Cu, Fe, Ti, P	60 MT @ 0.2% Cu, 27% Fe, 5% Ti, 5% P; plus 32 MT @ 0.3% Cu, 23% Fe, 0.02% Ni, 2.48% Ti, 0.36% P	Newmont Mining Corporation of Canada Limited (Newmont Capital) (CMH 2002-2003, p.170)	AF (F.N. 2.14737; 1991)	87 leases and additional claims acquired from acquisition of Redstone Resources Inc. and Franco-Nevada; optioned to Aurogin Resources Ltd.
Dead Horse Creek North 42D/15SE	Pb, Zn, Ag	14 000 T @ 1.45% Pb, 7.28% Zn, 8.27 opt Ag	G. and W. Michano (2 of 8 original patented claims); remainder open for staking (Resident Geologist's Files)	Resident Geologist's Files	Inactive

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Dead Horse Creek South 42D/15SE	Pb, Zn, Ag	35 000 T and 36 000 T (Zones 1 and 2) @ 19.87% Pb, 9.08% Zn, 27.65 opt Ag	J. McCabe (Resident Geologist's Files)	Resident Geologist's Files	Inactive
Dorion Mine 52A/15	Pb, Zn	Maximum of 35 000 T @ 10% Pb	K. Haskell (Resident Geologist's Files)	Prospectus, Andowan Mines Ltd. (30/03/57)	Restaked by current holder in 2002
Elizabeth Mine 52B/13SE	Au	250 000 tons @ 4.57 g/t Au	R. Moffatt (Resident Geologist's Files)	CMH, 1998-99, p.309	Inactive
Geordie Lake 42D/16SW	Cu, Ag, Pd	Indicated 24.4 Mt @ 0.33% Cu, 0.54 g/t Pd, 2.52 g/t Ag	L.E.H. Ventures Ltd. (CMH 2002-2003, p.247)	CMH 2002-2003, p.247	Drilling continuing in 2003
Great Lakes Nickel 52A/4SE	Cu, Ni, PGE	45.6 MT @ 0.344% Cu, 0.183% Ni; Pt & Pd values	Great Lakes Nickel Limited (CMH 2002-2003, p.197)	CMH 2002-2003, p.197	1970's bulk sample and feasibility study
Hammond Reef 52B/14NW	Au	85 Mt @ 0.93 g/t Au (= 2.56 million oz Au)	Kinross Gold Corporation (CMH 2002-2003, p.336)	News Release, Pentland Firth Ventures Ltd., 1997	1997: drilling, channel sampling and inventory calculation
Hemlo (Interlake) 42C/12NW	Au	10.8 M tons @ 0.216 opT Au (=2 328 000 oz Au)	Newmont Mining Corporation of Canada Limited (Newmont Capital) (CMH 2002-2003, p.170)	First-Quarter Report, Franco-Nevada Mining Corporation Limited, 1999	Advanced exploration drifting and underground diamond drilling 1998-1999
Jack Lake 52B/14SW	Au	Possible: 75 000 T @ 0.35 opT Au and 3000 T @ 0.30 opT Au; or 100 000 T @ 0.45 opT	M. Wicheruk (Resident Geologist's Files)	OFR 5332, p.J-7 (1981) Annual Report, Asamera Inc. (1981)	Inactive
Jean Lake 42E/05NW	Li	1.689 MT @ 1.30% Li_2O	Golden Nugget Exploration Inc. (CMH 2002-2003, p.190; Resident Geologist's Files)	Jean Lake Lithium Mines Ltd., Annual Report (1957)	Inactive
Lac La Croix 52B/05SW	Li	1.525 MT @ 1.27% Li_2O	Within Quetico Provincial Park	AF	Mining Lease of Occupation expired in 1970
M.N.W. 52H/04NE	Li	40 000 T "high-grade Li"	Golden Nugget Exploration Inc. (CMH 2002-2003, p.190; Resident Geologist's Files)	Geological Survey of Canada, Economic Geology Report 21, p.61 (1965)	Option to earn 70% interest granted to Platinova A/S in 2001 (CMH 2001-2002, p.296)
Marathon prospect 42D/16SW	Cu, Ni, PGE	24.3 Mt measured and indicated resources grading 1.22 g/t Pd, 0.31 g/t Pt, 0.10 g/t Au, 0.37% Cu	Press Release, October 12, 2004	Marathon PGM Corporation (Company Press Release, October 12, 2004)	Property sold to Marathon PGM Corporation (Polymet Mining Corp. press release, January 15, 2004)
Marathon prospect 42D/16SW	Cu, Ni, PGE	21 261 000 t measured and indicated resources grading 1.32 g/t Pd, 0.34 g/t Pt, 0.12 g/t Au, 0.40% Cu	Polymet Mining Corp. (CMH 2002-2003, p.344)	Geomaque Explorations Ltd., Press Release, October 16, 2001	Property sold to Marathon PGM Corporation (Polymet Mining Corp. press release, January 15, 2004)
McVittie 52H/08NE	Li	261 000 T @ 1.03% Li_2O	Golden Nugget Exploration Inc. (CMH 2002-2003, p.190; Resident Geologist's Files)	GR 31, p.89 (1965)	Inactive

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Nama Creek 52H/08NE	Li	4 292 232 tons @ avg. 1.06% Li_2O	Coniagas Resources Limited (CMH 2002-2003, p.109)	CMH 2002-2003, p.109	Inactive since 1957
Nicopor 42D/14NW	Ni, Cu	185 000 T @ 0.48% Ni, 0.26% Cu (0-90 m); plus 190 000 T @ 0.40% Ni, 0.12% Cu (90-180 m)	B. Fowler and M. Shuman; optioned to Novawest Resources Inc. (CMH 2002-2003, p.317)	Zenmac Metal Mines Ltd., Annual Report (1970)	Optioned to Novawest Resources Inc.; explored in 2001-2003
North Shores 42D/14SW	Au	Geological reserves of 2 Mt @ 2.2 g/t Au (Afric zone)	Autotrac Ltd.; currently optioned to International Taurus Resources Inc. (CMH 2002-2003, p.230)	Resident Geologist's Files	Explored in 1997 by Cyprus Canada Inc.; currently optioned to International Taurus Resources Inc.
Ontario Lithium (Jackpot) 42E/05SW	Li	1.18 MT @ 1.084% Li_2O	International Precious Metals Corporation (CMH 1997-1998, p.250) (company address and status unknown; CMH 2000-2001, p.220)	CMH 1997-98, p.250	Drilling in 1994
Pistol Lake 52B/09NW	Au	9.6 mt @ 1.4 g/t Au or 2.9 mt @ 2.6 g/t Au	D. Parker and B. D'Silva	GR in AF	Drilled by Detector Resources Ltd. 1994-1995
Powell 52B/07SW	Au	250 000 T @ 0.25 opT Au	Saganaga Resources	NM, Jan. 22, 1990	Milling bulk sample on site, 1992
Prairie Lake 42E/02SE	U, Nb, REE, wollastonite	200 000 T @ 1.8 lbs/T U_3O_8, 5.0 lbs/T Nb_2O_5	Nuinsco Resources Limited (CMH 2002-2003, p.319)	NM (03/05/79)	Prefeasibilty study on cement/lime products completed with positive results
Sapawe Mine 52B/14SW	Au	528 614 T @ 0.31 opT Au	Sapawe Gold Mines Ltd. (Resident Geologist's Files)	Sapawe Gold Mines Ltd., Press Release, March 10, 1995	Diamond drilling, 1995
Sawbill Lake 52B/14	Au	66 600 T @ 0.20 opT Au		OFR 5332, p.J-4 (1981)	
Schreiber–Pyramid 42D/14SE	Au	107 T @ 0.71 opT Au	B. Fowler (Resident Geologist's Files)	Resident Geologist's Files	Inactive; last worked in 1992
Silver Mountain 52A/04NW	Ag	60 000 T @ 5.0 opT Ag, 12% CaF_2		NM (28/10/54)	
Silver Islet 52A/07SW	Ag	115 000 T @ 40 opT Ag in dump, plus 300 000 oz Ag in roof pillar; or 1 050 000 oz Ag plus 750 000 oz Ag in pillars and stopes	Cross estate (Resident Geologist's Files)	MP 71, p.44 (1976) MRC 10, p.74 (1968) NM (18/10/79) NM (10/02/83)	Dump material processed ca.1984 by QC Explorations Ltd.
Snodgrass Lake 52B/10SE	Au	60 Mt @ 1.1 g/t Au; including measured and indicated resources of 475 000 t @ 6.2 g/t Au	Moss Lake Gold Mines Ltd. (CMH 2002-2003, p.283)	CMH 2002-2003, p.283; River Gold Mines Ltd., Annual Information Form, May 3, 2002	Drilling in 2003; seeking JV partner
Stewart–Fire Tower 52A/12SE	Au	60 000 t @ 3.0 g/t Au	M. Stewart; optioned to Valerie Gold Resources Ltd. in 2002 (CMH 2002-2003, p.431)	GR in AF	Currently being explored by ValGold Resources Ltd.

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Sunbeam 52B/14	Au	4410 T @ 0.42 opT Au	(unknown)	OFR 5332, p.J-2 (1981)	Acquired by Allegheny Mines Ltd. in 1996 (company delisted 1999)
Swamp River 52B/09SE	Au	998 000 T @ 0.12 opT Au (incl. 675 000 T @ 0.146 opT Au)	Band-Ore Resources Ltd. (CMH 2002-2003, p.52); optioned to Staccato Gold Resources Ltd.	CMH 2002-2003, p.52	Drilling in 2003 on main zone; Mag, EM, IP
Vanguard 52B/09NW	Cu, Zn, Au, Ag	East Vanguard: 100 000 T @ 1.8% Cu, 3.4% Zn, 0.22 opt Ag, 06 to 0.19 opT Au; West Vanguard: ~200 000 T @ 1.3% Cu, 1% to 2% Zn, 0.28 opT Ag	C. Bumbu, M. Fogen and J. Martin (Resident Geologist's Files)	News release, Allegheny Mines Corporation, Nov. 4, 1997	Optioned to Canadian Golden Dragon Resources Ltd. in 2002; diamond drilling in 2002-2003; VTEM in 2004
Vegan 42E/05SW	Li	750 000 T @ 1.38% Li_2O	Golden Nugget Exploration Inc. (CMH 2002-2003, p.190; Resident Geologist's Files)	NM (22/03/56)	Inactive
Willecho and Willroy 42F/04NW	Cu, Zn, Ag	759 448 T @ 4.42% Zn, 0.28% Cu, 1.47 opt Ag (combined)	Noranda Inc. (The Chronicle-Journal 25/10/98)	Willroy Mines Ltd., Annual Report (1976)	Past producers; last optioned/worked by Noranda Mining and Exploration Inc.
Winston Lake 42D/14NW	Cu, Zn	598 000 t @ 1.0% Cu, 21.2% Zn (incl. 33% dilution)	Inmet Mining Corporation	Inmet Mining Corporation, Pers. Comm., 1999	Mine closed, February 1999
Wisa Lake 52C/08NE	Li	330 000 T @ 1.15% Li_2O	P. Gagne (Resident Geologist's Files)	Manager's Report, Lexindin Gold Mines Ltd. (1958)	Diamond drilling, 1950s; staked in 2001 by current holder

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Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

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